_reinterpreting the hutong

by: Allison Struck

A Terminal Project

Presented to the Faculty of

The College of Architecture at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Architecture

Major: Architecture

Under the Supervision of *Dean Wayne Drummond*

In association with *Keith Sawyers*

Lincoln, Nebraska

May, 2008

Statement of Intent

China is a nation growing at an alarming rate economically, socially, and structurally. It is expanding so rapidly that cities literally emerge overnight. However, Chinese architecture is caught in a very evident struggle between the past and the future. The past presents them with a long tradition of Imperial architecture in which spaces were emphasized rather than buildings. Construction consisted mainly of wood, and buildings were presented in a horizontal layout. This contrasts deeply with the steel "western" skyscrapers being constructed at a furious rate today. So, how can a culture with such a rich history of traditional building reject the principles that they have lived by for centuries?

There are very few architects who have managed to successfully merge traditional Chinese strategies into a modern architectural piece. This is a challenging task because Beijing, like most Chinese cities, is still searching for its own contemporary identity. A contemporary Chinese architecture does not truly exist, and much of this is due to globalization.

Evidence of this dilemma can be seen everywhere throughout China. In Beijing, the remains of an old Taoist temple now stand in a parking lot of a new mall more than twice the size of the Mall of America. Pictured is a large high rise commercial building with an awkward traditional Chinese roof placed on top.

This problem is perhaps most evident in housing, which is the starting point of my thesis research. The once prominent Hutong neighborhoods that have been in families for generations are being torn down to build cheap high rise housing developments. These developments change the way people live, work and interact with others. Most of these developments take no consideration for aspects of traditional Chinese living.

continuous construction of sky scrapers

endless Shanghai skyline

modern building with traditional roof

My intent is to analyze the traditional Chinese courtyard house and the strategies used in the building process and space design. I will then research modern architecture being constructed in China to see how it responds to these strategies. Through my research, as well as the expertise of my mentor, Wayne Drummond, I will determine what I believe to be the defining elements of traditional Chinese residential architecture. I will then pursue an answer for my initial question: what is contemporary Chinese architecture?

My goal is to design a housing complex that will meet the demands of their society today while retaining the elements that defined their culture in the past.

hutong in Beijing

NAAB Performance Criteria

The initial research in Architecture 613 involves the cultural background information as well as travel experience that will require research skills, analysis of human behavior in their respective living environments, critical thinking skills, and speaking and writing skills. In order to interpret and portray the acquired information, critical thinking skills, graphic skills, and formal ordering systems will be utilized. Upon analyzing the information, programmatic preparation, response to site conditions, use of precedents and fundamental design skills will be employed.


elaborate courtyard house entrance

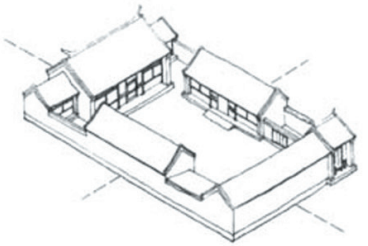
In conjunction with the criteria previously stated, Architecture 614 will involve design decisions such as accessibility, building system integration, and comprehensive design.


typical high rise apartments

Site Description

The specific site for this project has been well defined but not physically determined. The program requires a dense urban residential setting in China. In March of 2007 I will be conducting a visit in Beijing where I will be documenting the Hutong neighborhoods, and I will select and document a site that best fits the needs and offers the most potential for this project.

The Hutong neighborhoods are slowly being destroyed and replaced by high rise structures, so I feel this would be an appropriate site to retain the disappearing culture in a new housing alternative.



courtyard house

view from above a Hutong neighborhood

Methodology/ Approach

I am currently reading about the spatial strategies employed in traditional Chinese architecture. There is a broad range of information available through books and internet sites that will lead to a basic understanding of the culture of Beijing and the living environment in the city. This background information, combined with first hand knowledge from my mentor and my own personal travels will lead to a deeper understanding of living conditions in Beijing. This will provide a solid base on which to begin studying how and where their past culture fits into their present day society. Through the use of drawings, pictures, diagrams, study models, and computer images I will convey essential formal elements at each stage of the research, programming, and design process.

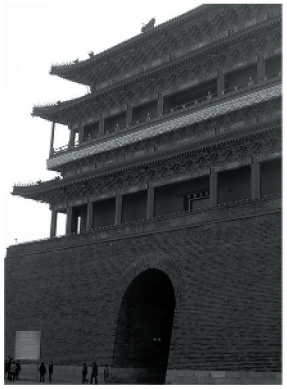
typical high rise apartments

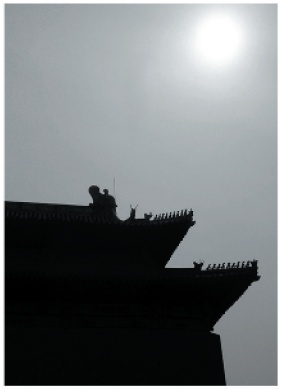
documentation Beijing _ March 2007



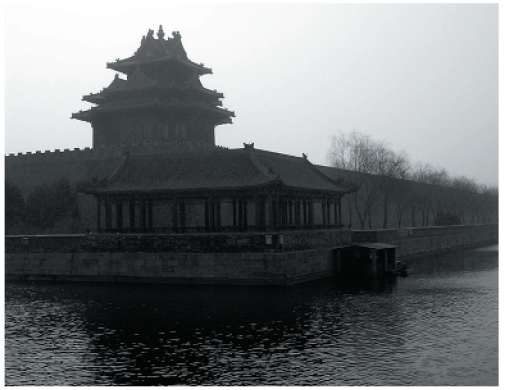


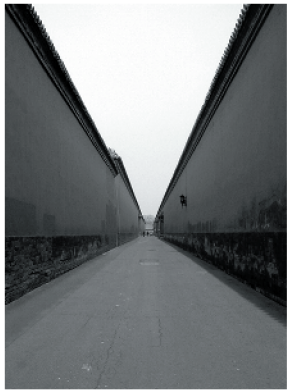
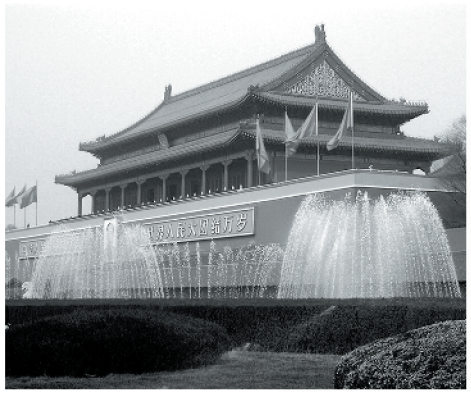
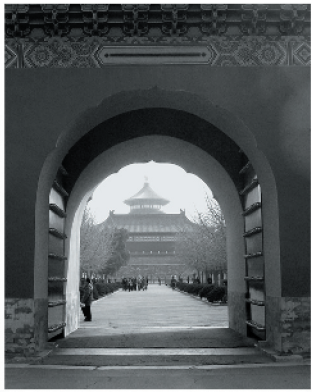
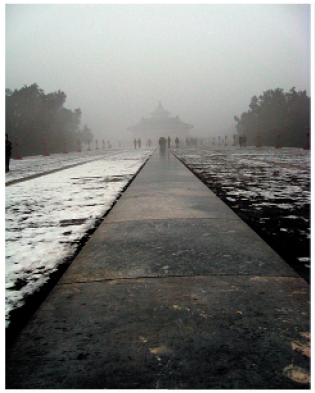




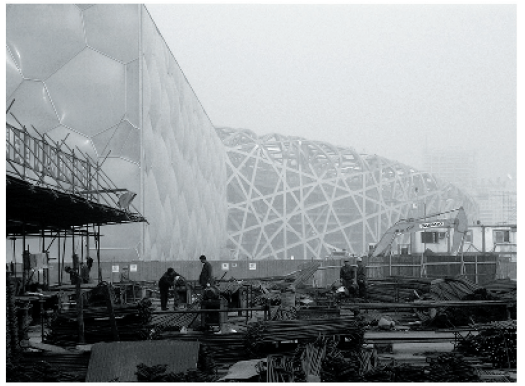







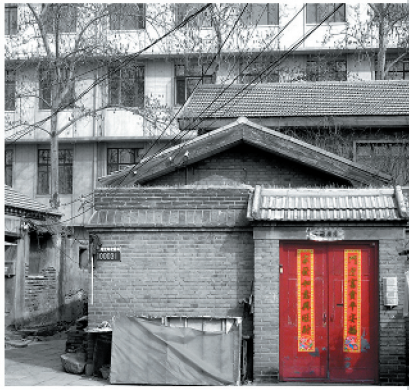





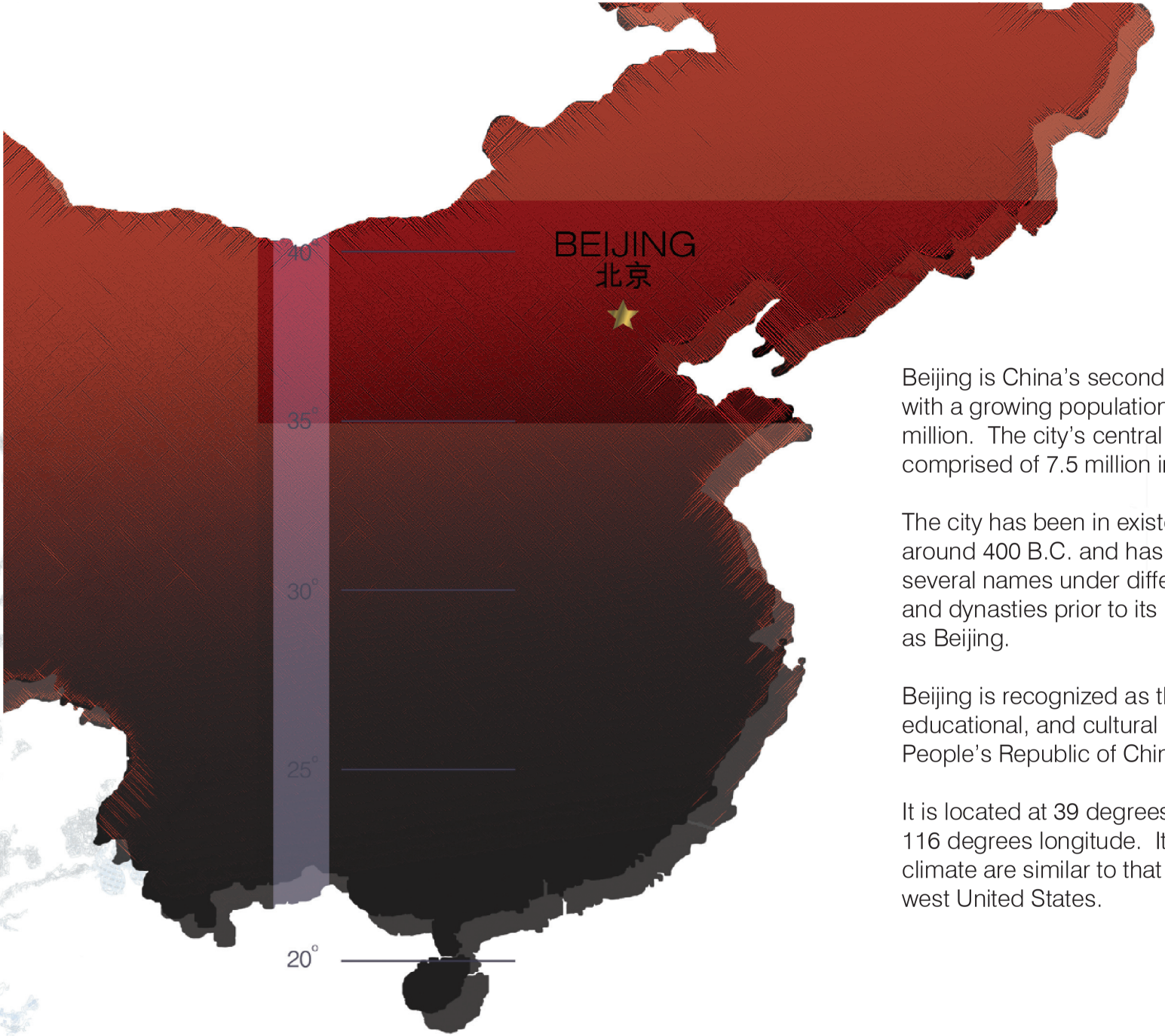












Beijing is China's second largest city with a growing population of 17.5 million. The city's central core is comprised of 7.5 million inhabitants.

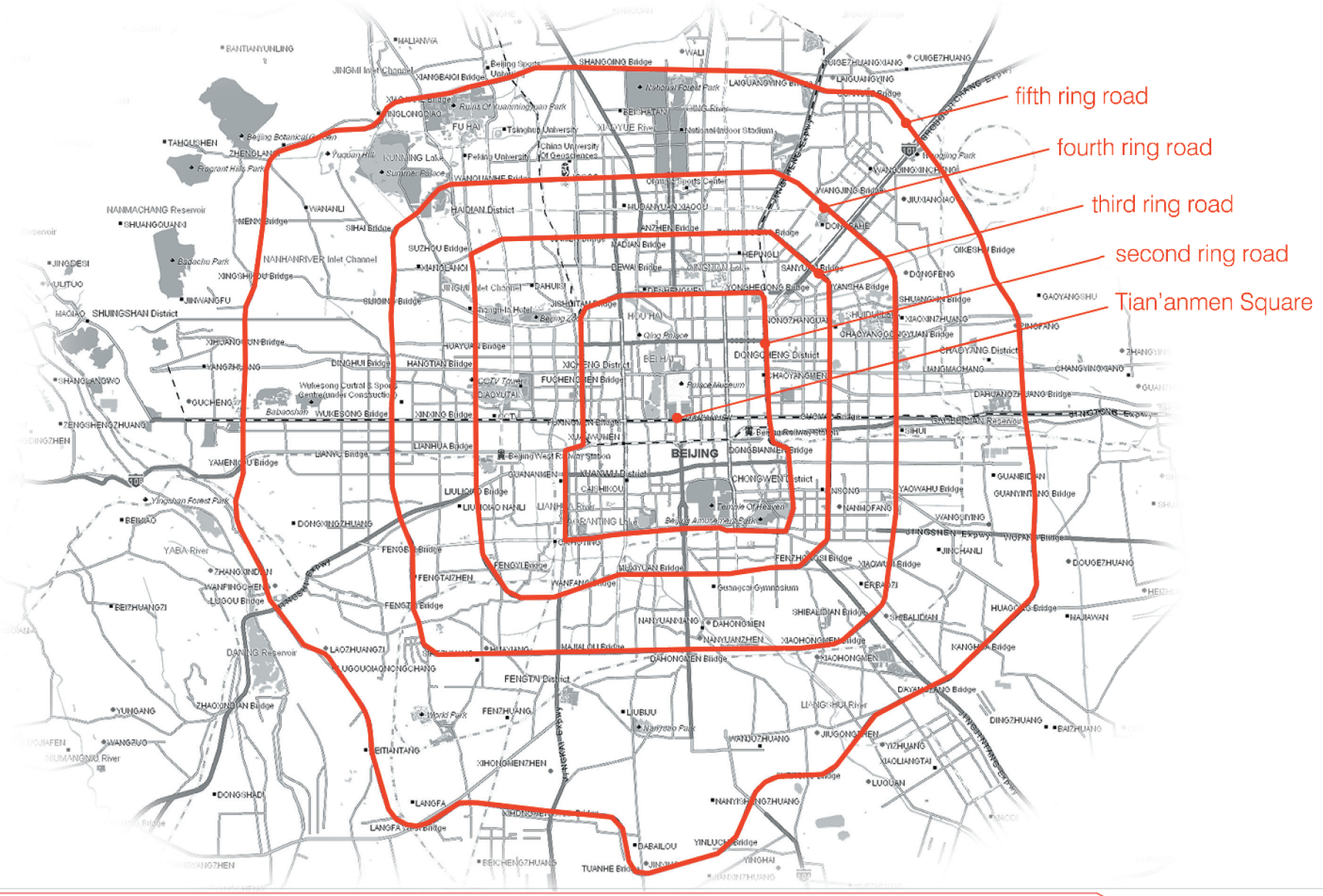
The city has been in existence since around 400 B.C. and has taken on several names under differing rulers and dynasties prior to its recognition as Beijing.

Beijing is recognized as the political, educational, and cultural center of the People's Republic of China.

It is located at 39 degrees latitude and 116 degrees longitude. Its latitude and climate are similar to that of the mid-west United States.

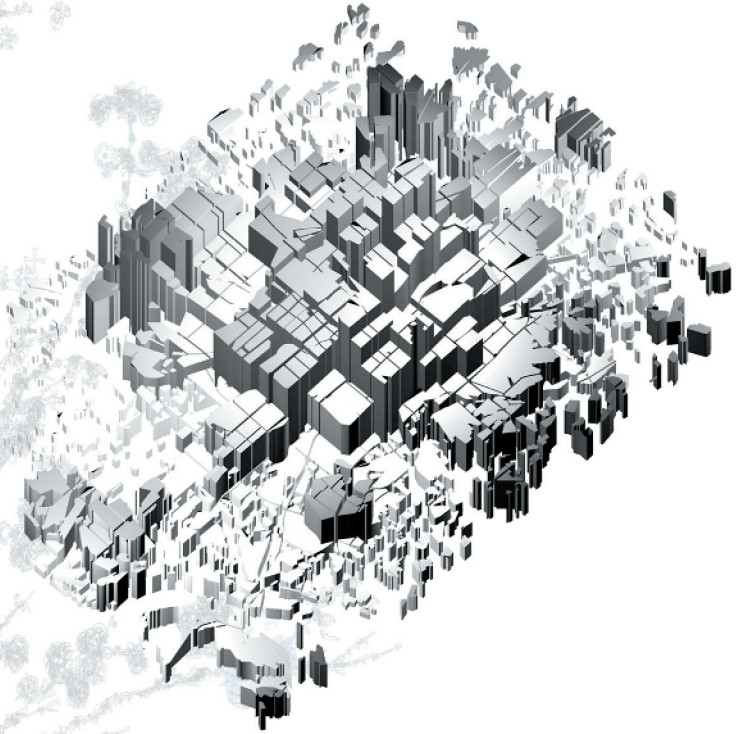
_city structure

Beijing is organized around multiple ring roads which surround the city center. The Second Ring Road is extremely close to Tian'anmen, the centre of Beijing. There are currently five existing rings, the last being the Sixth Ring Road (not shown on this map). However, more ring roads are currently under construction.



_population density

These 3D representations of Beijing illustrate the population densities of the city in 1990 and 2006. The most densely populated area in both illustrations is the city center. Within the past 16 years, the city has exploded radially as well as in outgrowths mainly to the North and South. Based soley upong the illustrations, these outgrowths may be a more suitable location for a lower density housing alternative whereas a high density structure may be more appropriate within the radial growth closer to the city center or along the corridors of growth in more densly populated regions.

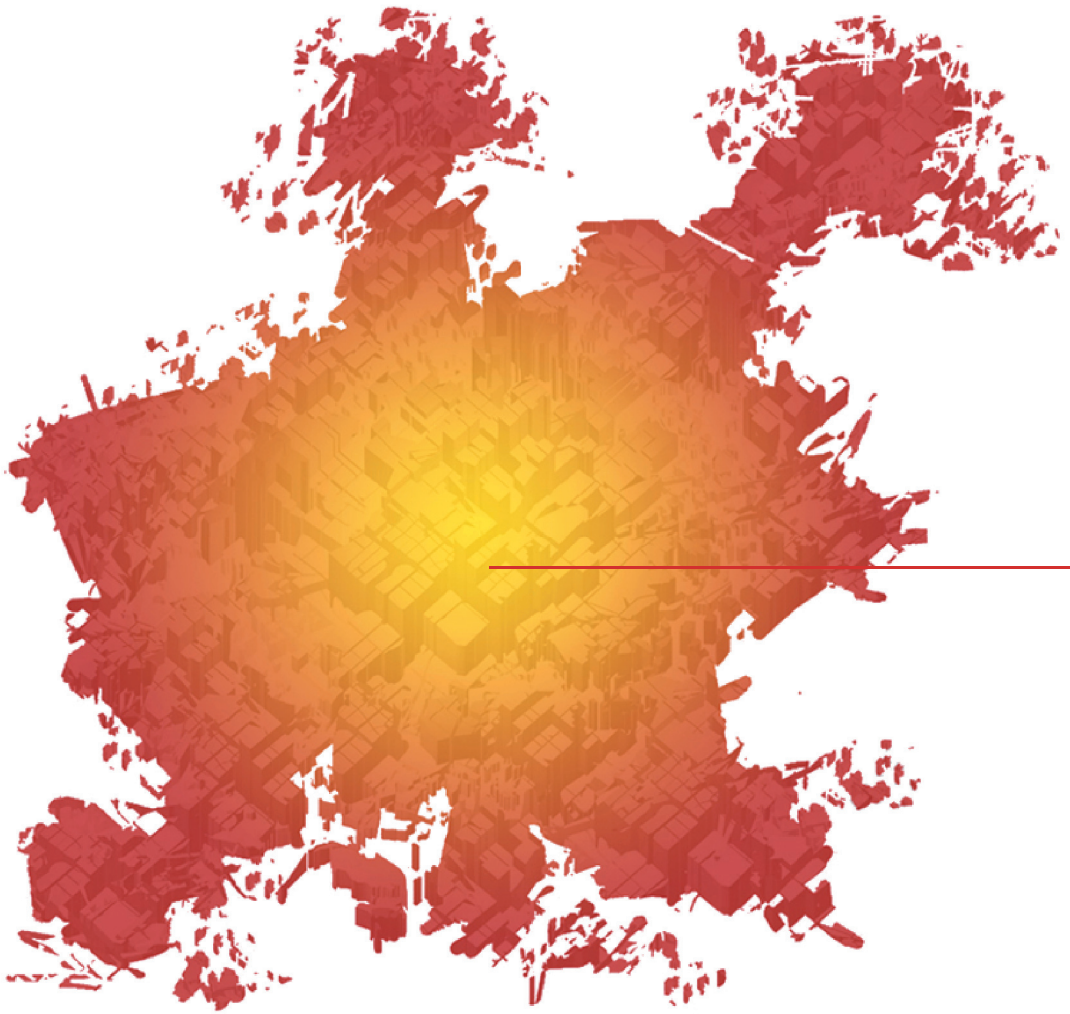


population density diagram _source Alain Bertaud, 1990

population density diagram _source DCF 2006

_building height

Although the city center is the most densely populated, the building height analysis is the inverse of the density diagram, with the city having the lowest elevation. This creates a dilemma as the most densely populated portion of the city contains the least built environment.



_population distribution

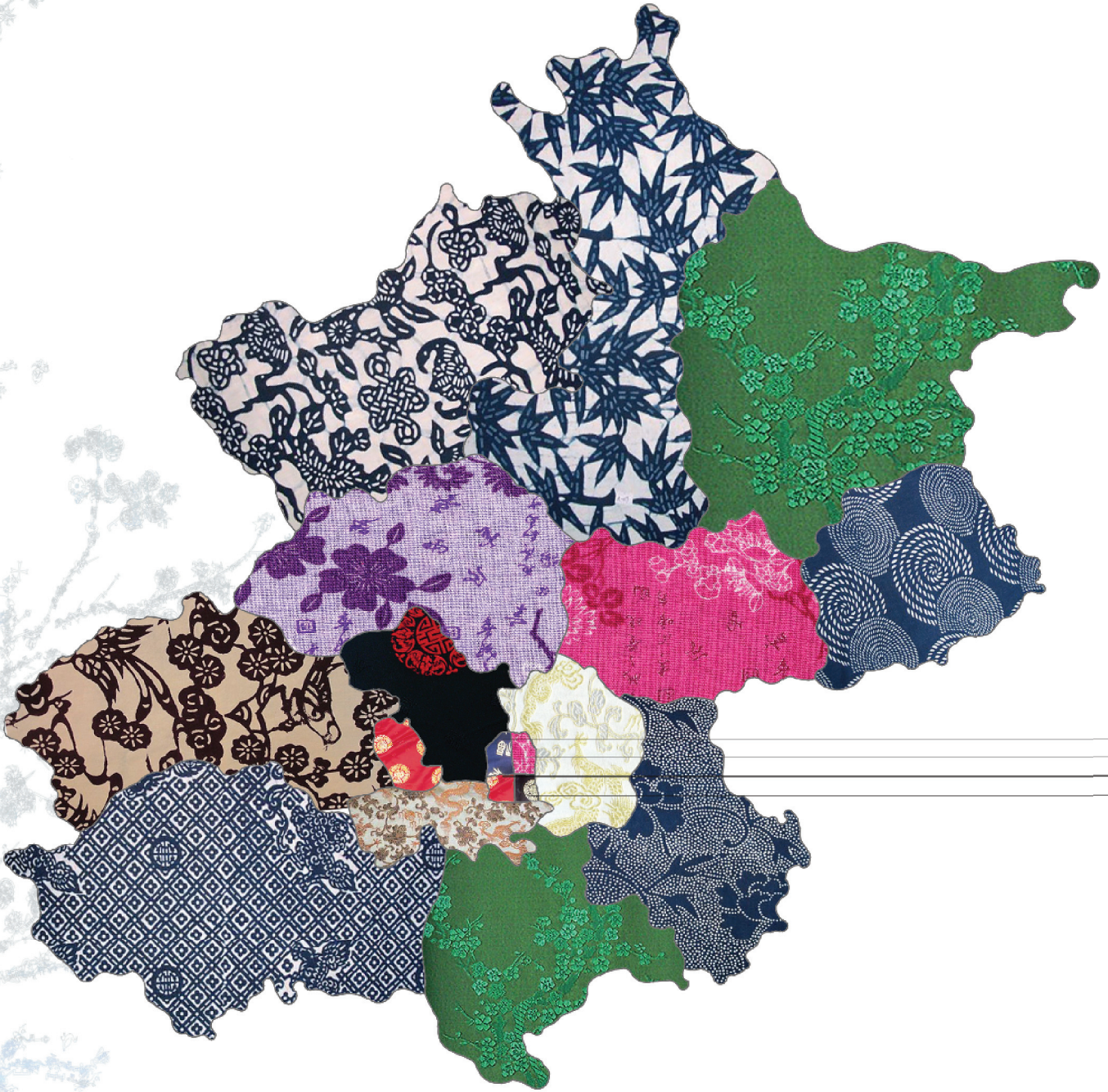
1970 _90% rural
_10% urban

2007 _10% rural
_70% urban

Beijing City Center
Lowest elevation/ highest density

low high

_districts of Beijing



Beijing districts

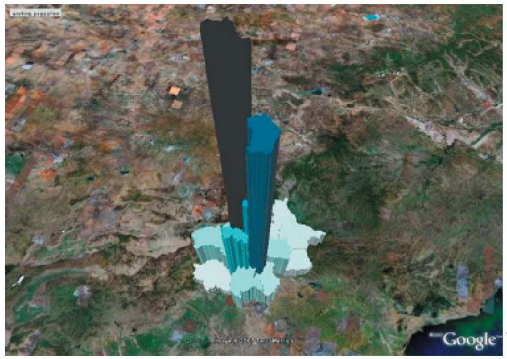
Yanquig
Changping
Huairou
Miyun
Shunyi
Pinggu
Tongzhou
Daxing
Fangshan
Mentougou
Shijingshan
Haidian
Chaoyang
Fengtail

_districts within the city center

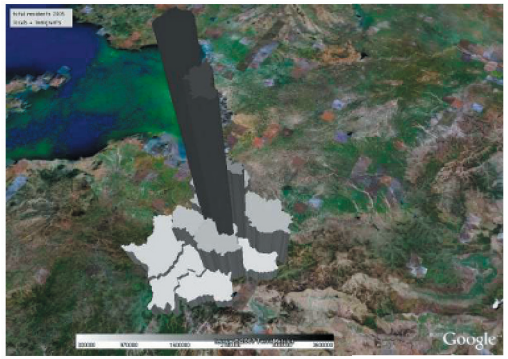
Xicheng
Dongcheng
Xuanwu
Chongwen

_population analysis

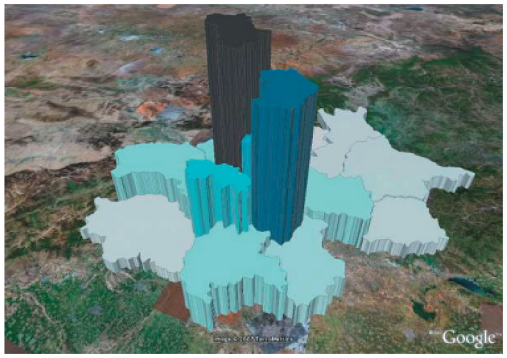
The illustrations below show that the largest population of people and their working environments is located within the Chaoyang District and the Haidian District, located northeast and northwest of the city center, respectively. This is an indictation that these areas would best facilitate a high density housing or multipurpose structure for workers in the city.



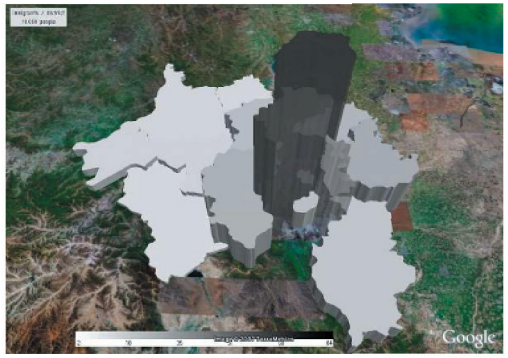
working population_ per district



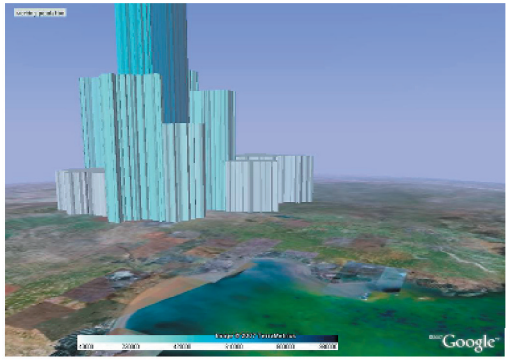
total pop_ per district



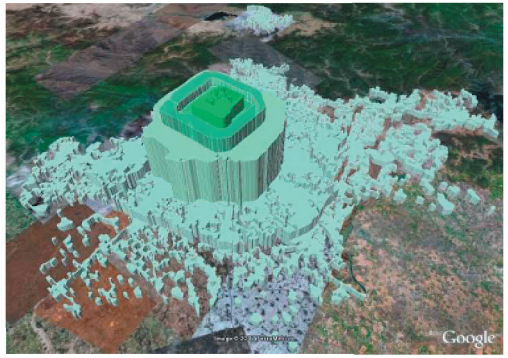
employment_ per district



immigrants_ per district



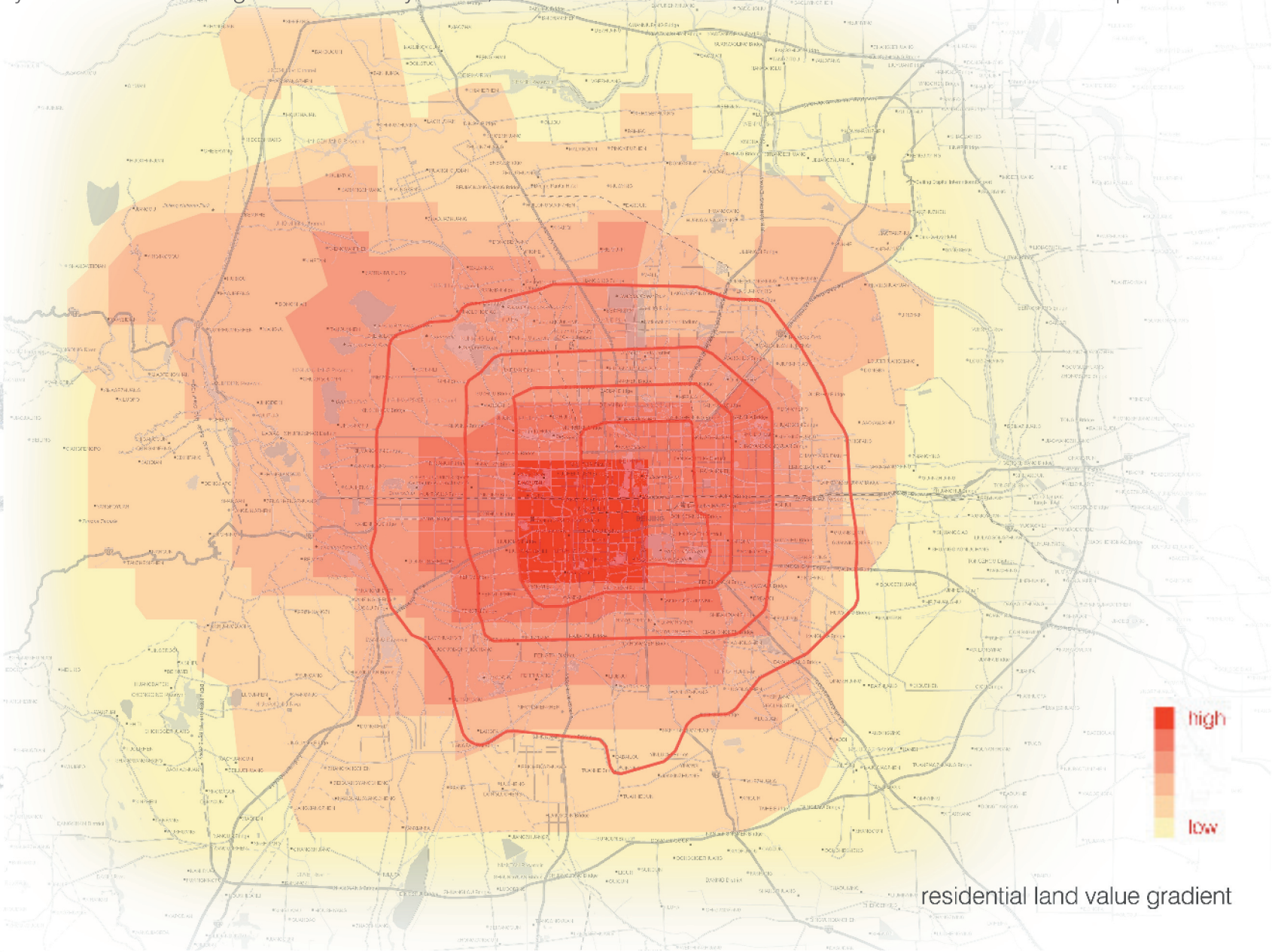
employment_ per district



population spread

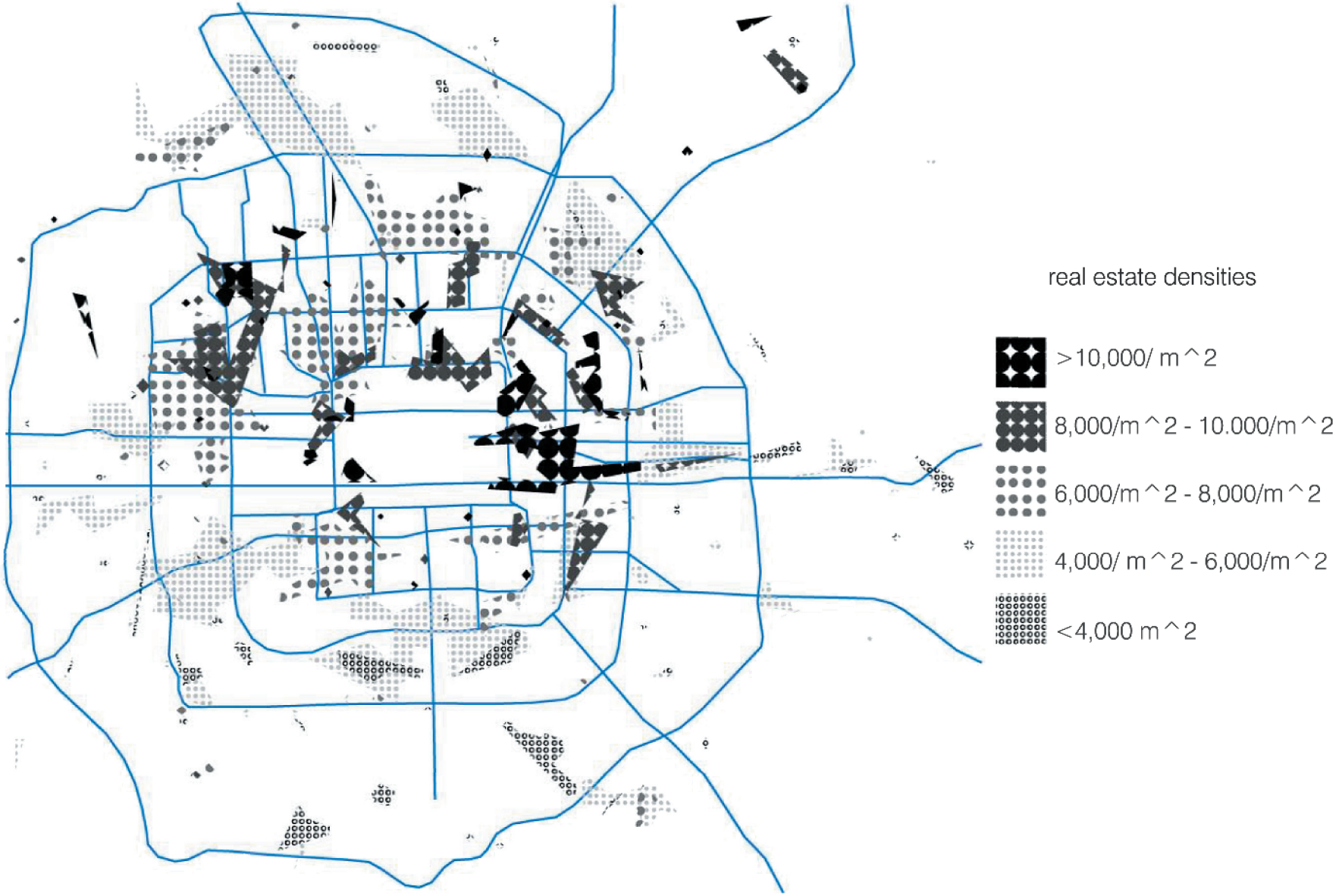
_land value

The land value increases as one moves closer to the city center, and the ring roads relate to the residential land value gradient. Density is vital when building close to the city center; this factor will determine the success of a residential development.



residential land value gradient

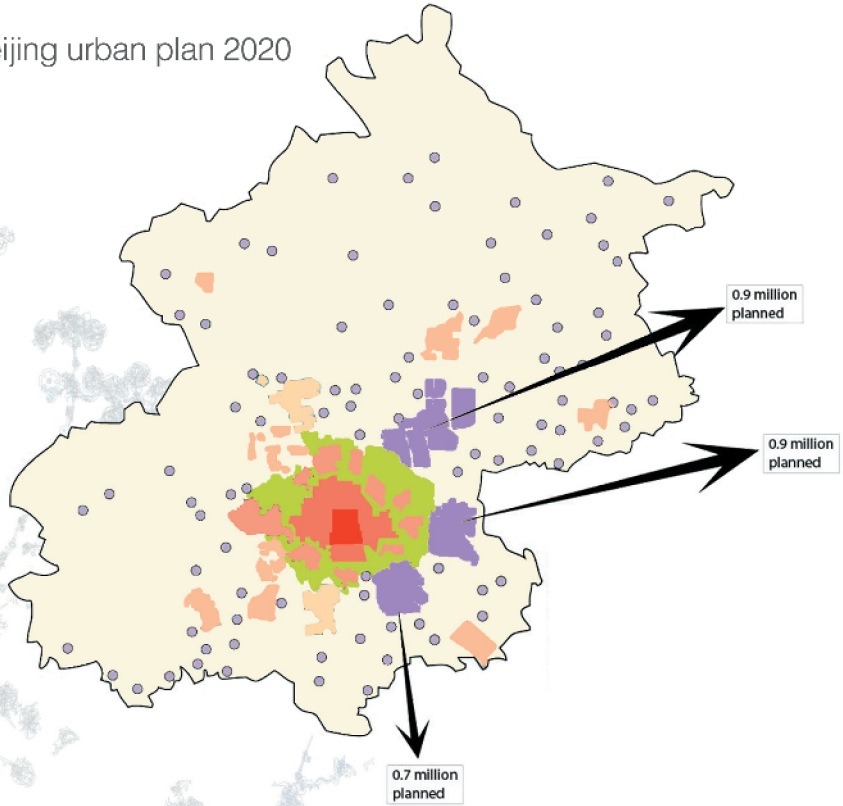
The city center is comprised mainly of historic landmarks therefore, it has a very low density. However, the most dense part of Beijing occurs just outside of the Second Ring Road and continues to lessen in density as it reaches farther away from the city center.



_prospected population

In 2020 there is expected to be 18 million people in Beijing, and 16 million in cities and townships, with 13.5 hukou population. The two illustrations below demonstrate differing directions for the planning of Beijing in 2020. The plan on the left incorporates three main satellites (purple) in order to create areas for further expansion to prevent the city center from becoming too overpopulated. The plan on the right deals with expansion to the East and a more even population distribution throughout the city zones listed.

Beijing urban plan 2020

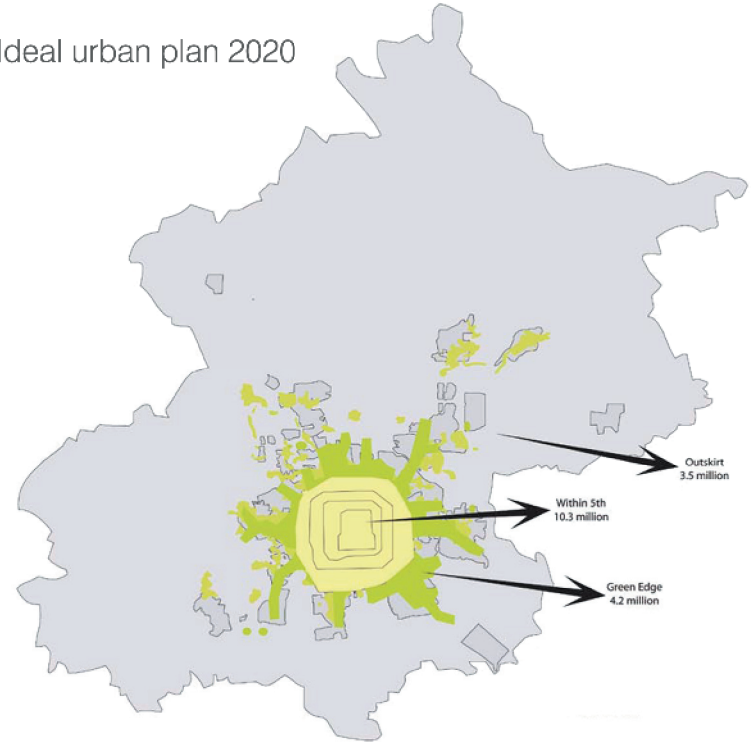


old city : 1.1 million in the old city (a new plan said the population in the old city will be reduced to 0.9 million)
central city : 5.4 million in the central city which is including the old city population
green belt: 0.4 million will stay in the green belt and around areas
multiple centers : 2.7 million living in the sub centers
satellites
developing satellites: 5.7 million living in new towns
three important satellites
small townships: 1.8 million living in small towns

8.5 million people will be living in the city center

7.5 million people will be living in the townships

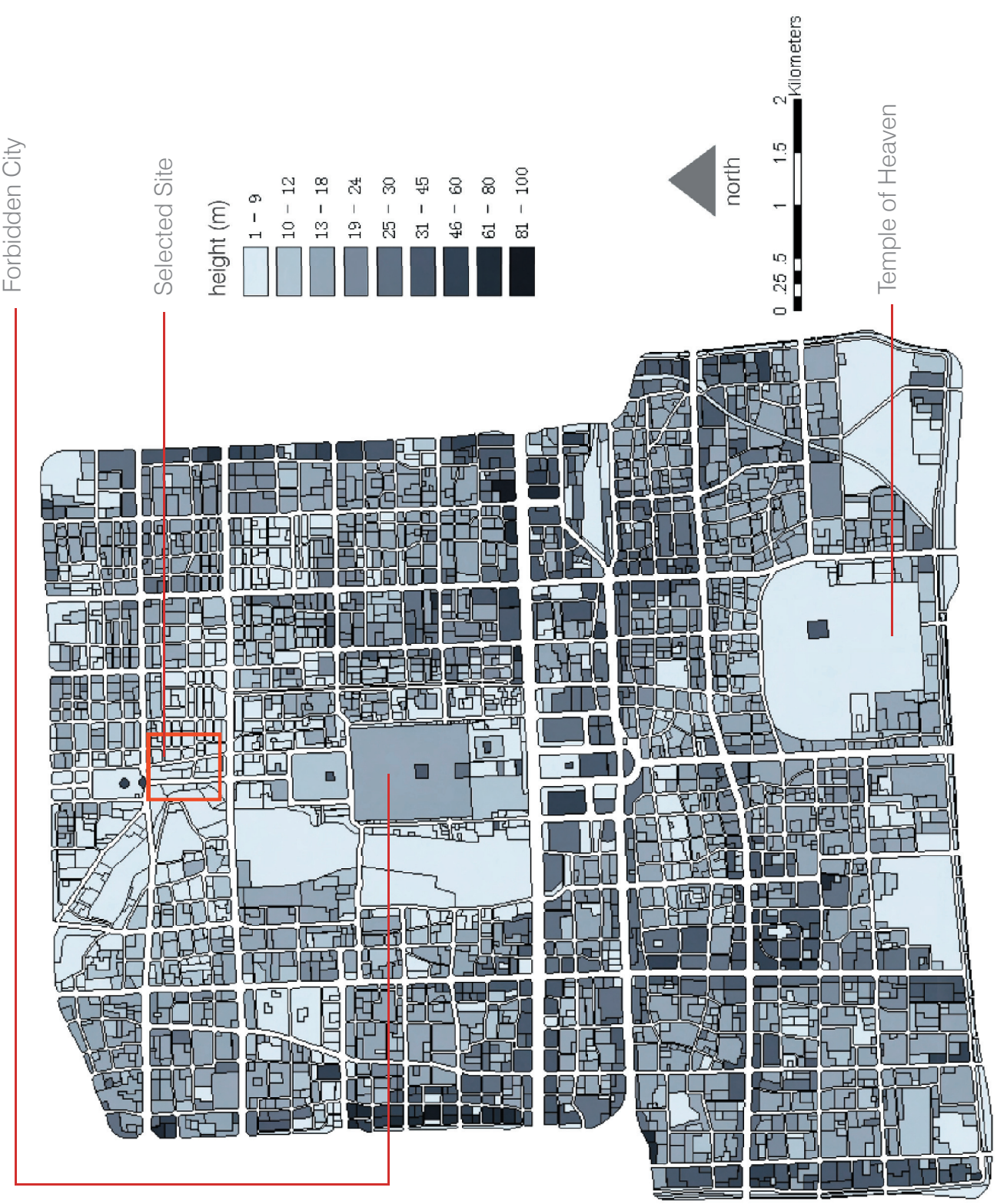
Ideal urban plan 2020



Ideal population zones:

within 2nd ring: 1.1 million
2nd to 3rd ring: 1.8 million
3rd to 4th ring: 2.6 million
4th to 5th ring: 4.8 million
green edge: 4.2 million
outskirts: 3.5 million

_city center building height



_dilapidated Beijing hutongs

Hutong _ demolition

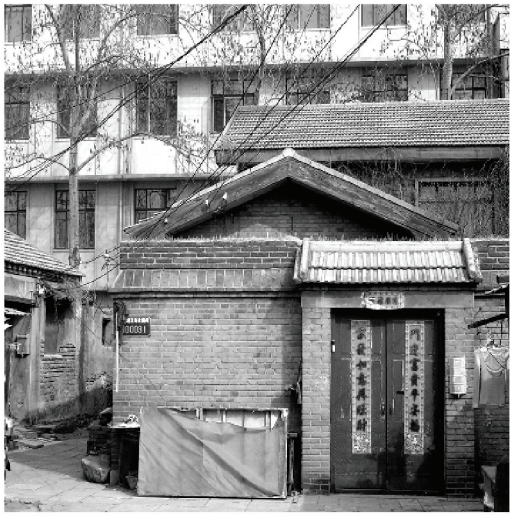
Post cultural revolution, people began migrating into the cities at a massive rate. Because there was limited space to occupy, people began to build more rooms into existing courtyard houses, negating many of the positive aspects of the living situation. The courtyards were often completely filled with small structures. This resulted in many families being crammed into an insufficient living situation and many courtyard houses began to be neglected.

In addition, because the land belonged to the government, not the individual, the government could give or take the land as they pleased. Differing compensations would also be distributed for properties of the same value. The bottom image on the left is a saying that was painted on the houses after the residents had been asked to leave their homes, many of which had been in their family for generations. The writing on the house reads *'everything is fair and good'* referring to the often unfair compensations which the people had no choice but to accept.

The government has now taken measures to demolish large hutong neighborhoods that have become dilapidated (pictured left) in order to clean up parts of the city. They have built large walls around the neighborhoods to block the view of the remaining rubble from the public. However, there are still people living in many of these structures who have no place to go.

There are small areas of hutongs in Beijing that are to be preserved; however, this is a housing style that is on its way to becoming only a part of their past.

_architectural struggle in Beijing



Hutong _ future scale shift

Because of this massive migration to the city, Beijing is struggling to accommodate all of its inhabitants. It has resolved, in many ways, to handle housing issues as they have been handled in dense urban areas in the west, with high rise towers. These towers have emerged overnight with little or no consideration for the heritage or culture of the people.

Many of the residents were forced from a horizontal living situation into a vertical tower completely void of any character or personality.

Almost all of Beijing's past architecture was based off of the horizontal principles displayed in the Imperial City. They are now forced to discover a new building style with new materials in a new dimension, and their struggle has been very evident. Throughout Beijing there are many buildings, such as the ones shown left, that paste elements of their architectural heritage on new structures which clearly do not read with the same intent as their predecessors.

There are also many areas where courtyard houses are simply trying to survive as high rise developments are slowly encroaching. The lower image displays the remaining portion of a hutong neighborhood adjacent to a recent high density development.

A major challenge that Beijing is dealing with is the quality level of these developments. Many of these towers are being constructed at such a furious rate that they suffer in the quality of materials and construction methods. This results in towers that age much more quickly and often fall apart within a few years.

Beijing needs developments that can accommodate a high density living while still considering its rich heritage. A new housing situation must be developed that takes these past principles into account while applying them to a new generation, a new architecture, and a new Beijing.

_architectural intent

There are four fundamental housing configurations that would be possible to pursue:

_restoration

_adaptation

_high density adaptation

_high density/ high rise adaptation

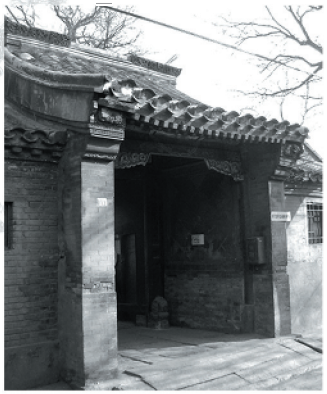
Restoration is definately essential, but does not offer any advice on future dwelling possibilities. Adaptation is an interesting configuation; however, because of the density of the city, it is not an economically sound choice.

My intent is to explore a high density adaptation at a horizontal configuration and explore a high density/ high rise adaptation while still maintaining some of the ideas behind traditional residential architecture.

Beijing is changing rapidly; it is an incredible time to take part in the re-forming of the city. However, many of the high density housing developments being constructed are of a poor quality and have no resemblance to the horizontal orientation of living that has existed in Beijing for centuries. The city is struggling to retain some of its past while it moves full force into the future.

Because the city center is rich in tradition, extremely dense, and losing many of its residential neighborhoods for new construction; this will prove to be a good and challenging site for my residential mixed use complex. The challeng will be to retain the sense of scale and place within the development while striving for a contemporary housing situation that better meets the demands of people in Beijing today.

_research documentation of existing Beijing siheyuan _ March 2007

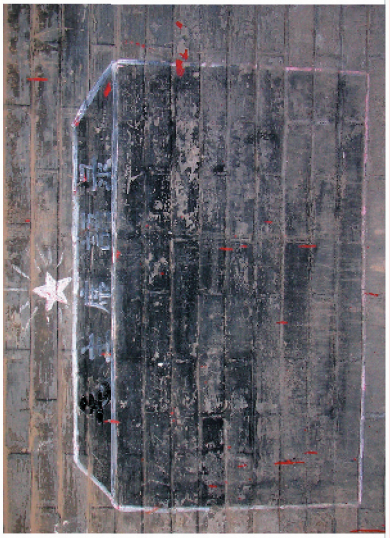








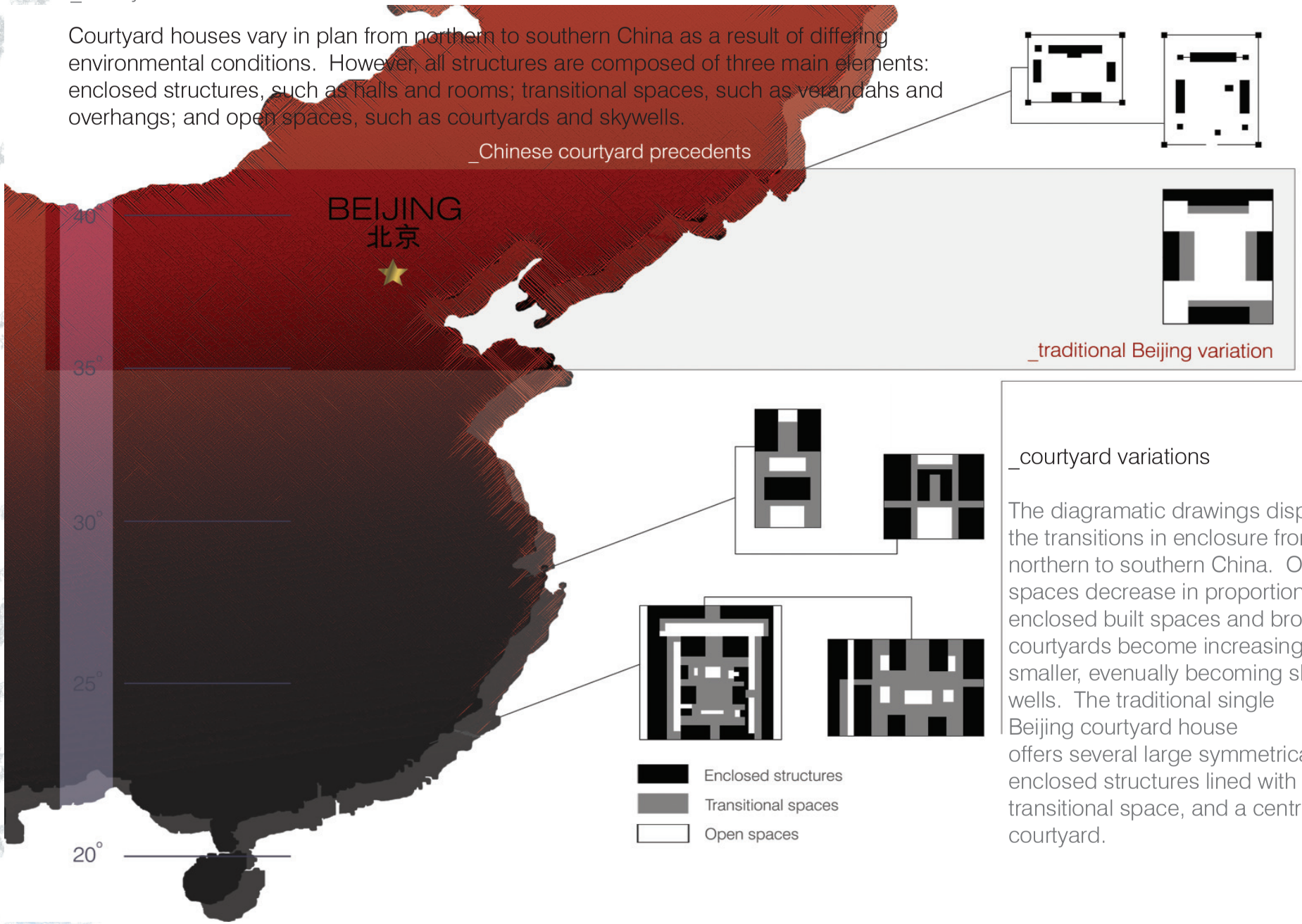




_courtyard variations

Courtyard houses vary in plan from northern to southern China as a result of differing environmental conditions. However, all structures are composed of three main elements: enclosed structures, such as halls and rooms; transitional spaces, such as verandahs and overhangs; and open spaces, such as courtyards and skywells.

_Chinese courtyard precedents



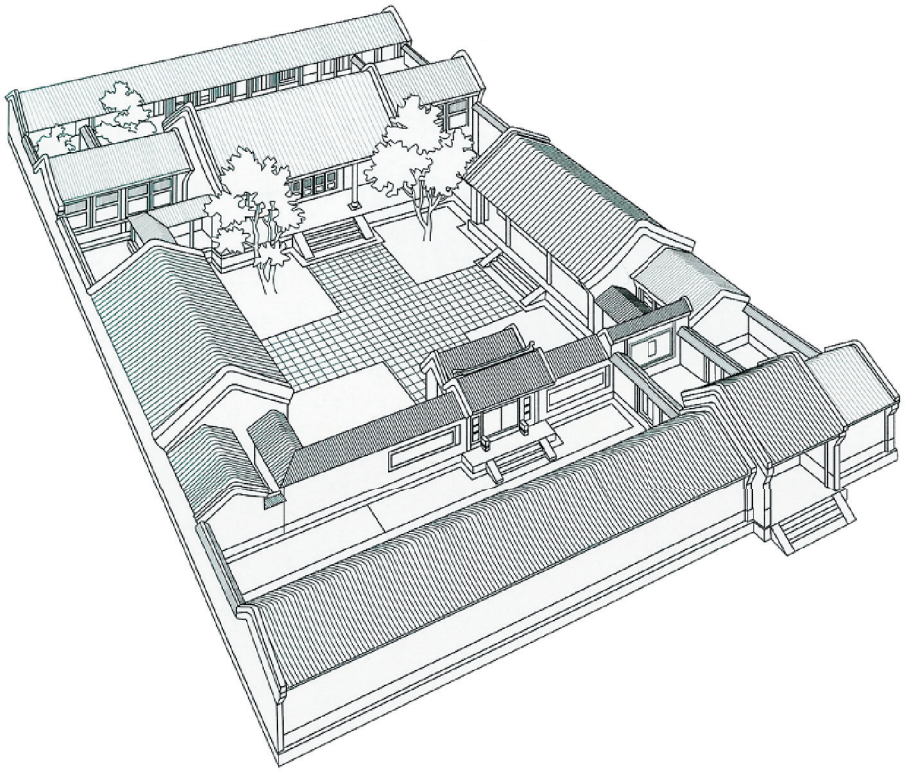
_traditional Beijing variation

_courtyard variations

The diagramatic drawings display the transitions in enclosure from northern to southern China. Open spaces decrease in proportion to enclosed built spaces and broad courtyards become increasingly smaller, evenually becoming sky-wells. The traditional single Beijing courtyard house offers several large symmetrical enclosed structures lined with transitional space, and a central courtyard.

Siheyuan - (Pinyin: sìhéyuàn)

The Siheyuan is a type of residence commonly found throughout China, but most famously in Beijing. The name literally means a courtyard, a space enclosed by walls, a yard surrounded by buildings. In China a courtyard is called a siheyuan, meaning a yard surrounded by four buildings. Throughout Chinese history, the siheyuan composition was the basic pattern used for residences, palaces, temples, monasteries,family businesses and government offices. While differing in details, the siheyuan all include the fundamental elements of Chinese architecture: enclosure, axiality, hierarchy, and symmetry.



Siheyuan (Courtyard House)

_spatial configurations

This schematic floor plan of a Beijing-style siheyuan portrays the complimentary patterns of open courtyards and enclosed structures. The lower floorplan illustrates this diagram more clearly in an existing two-courtyard house. The courtyards are labeled to illustrate the progression of privacy from the main gate to the main residential structure.

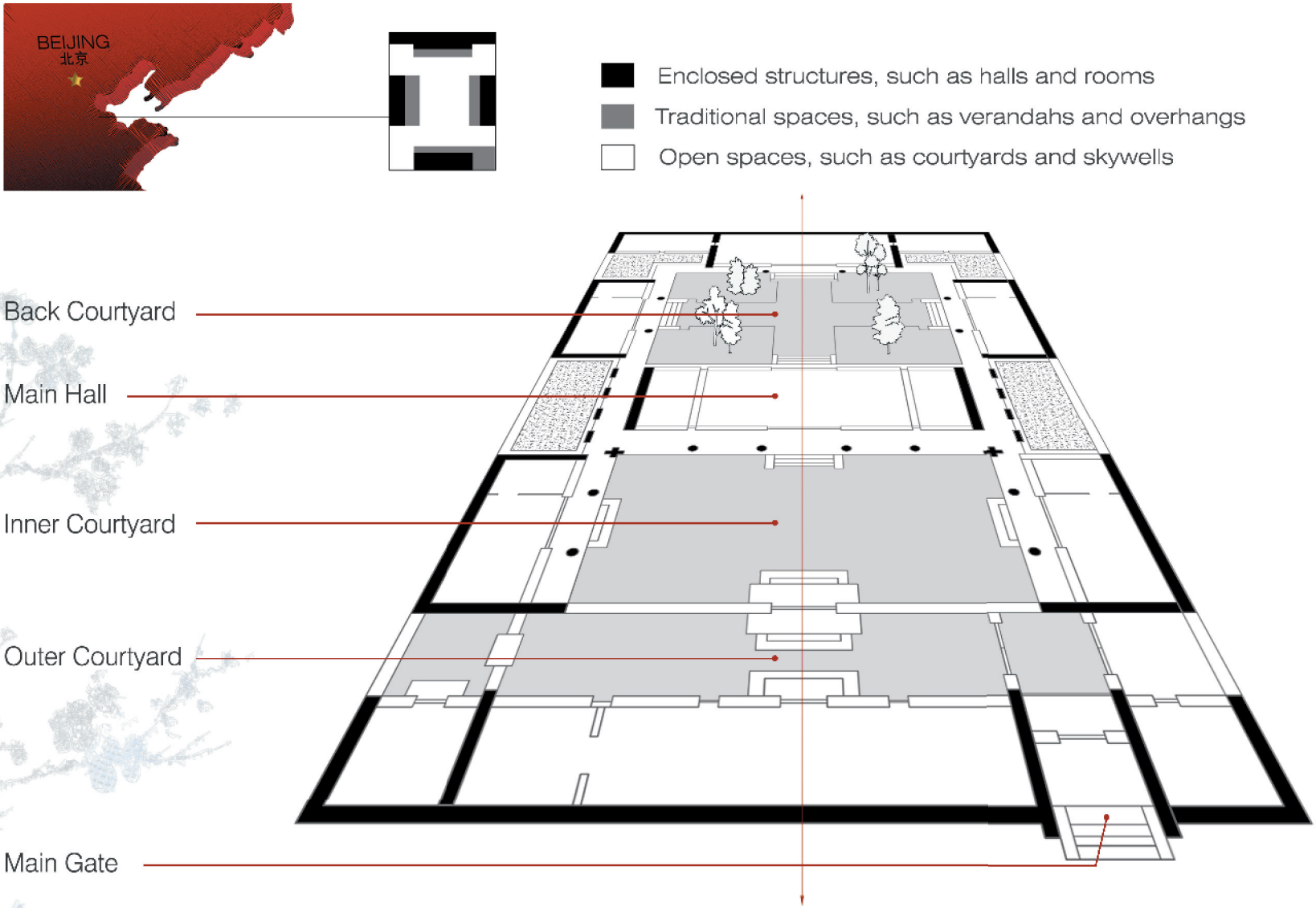


Image: Yan Chongnian. Beijing, The Treasures of An Ancient Capital. pp. 247

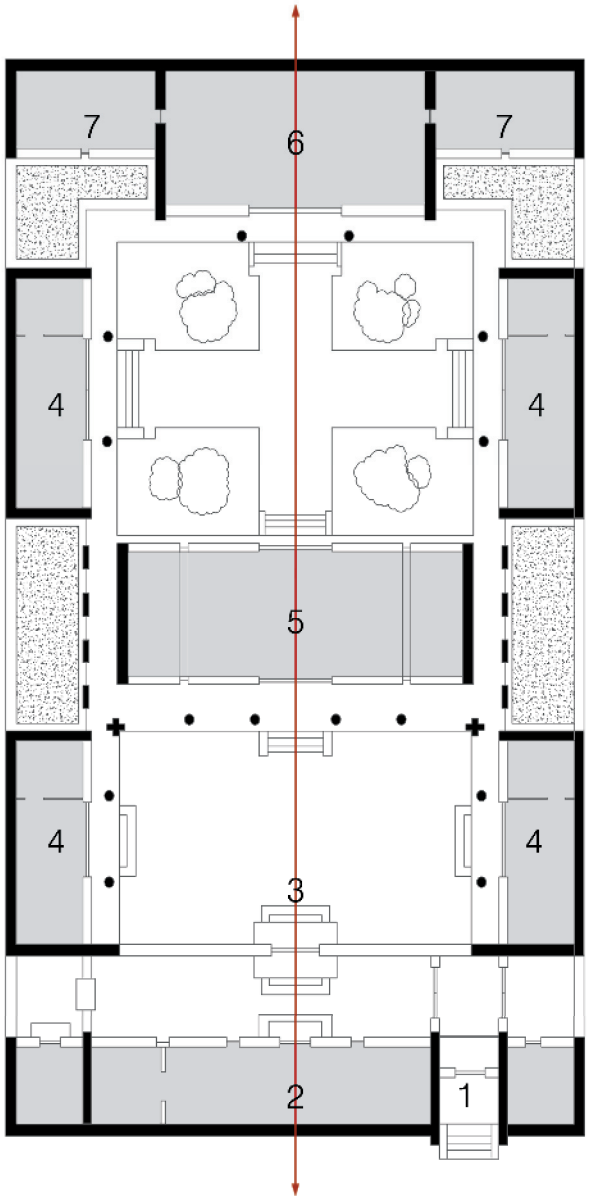


Image: Yan Chongnian. Beijing, The Treasures of An Ancient Capital. pp. 247

1. main entrance_ located to the south or southeast

2. rooms facing the rear_ these were reserved for the servants if the family was well-off

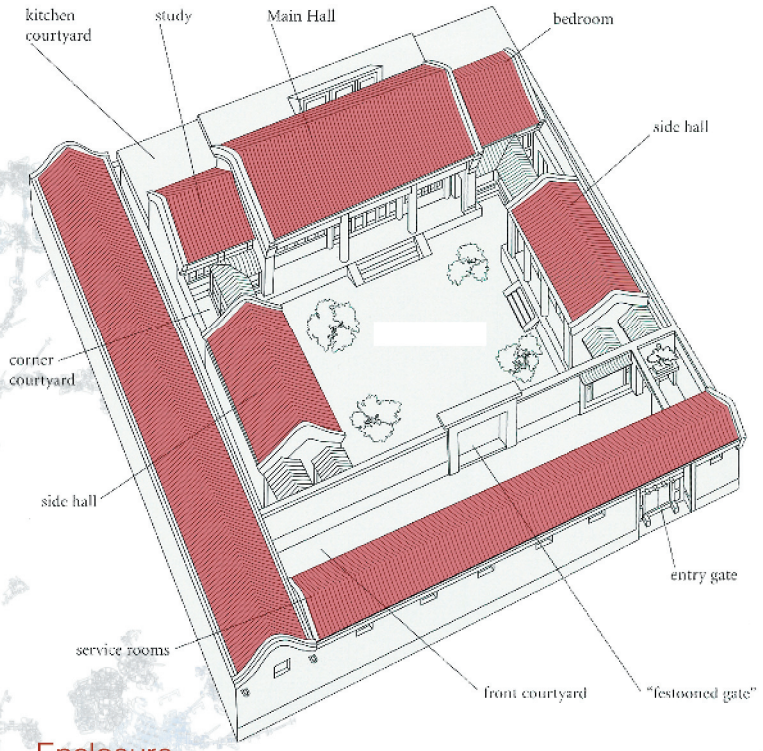
3. first courtyard_ cooking was carried out here/ the space is used to host guests and visitors

4. east and west side rooms_ for the sons and daughters or the sons' families

5. inner hall_ where the members of the family greeted guests/ where family ceremonies were held

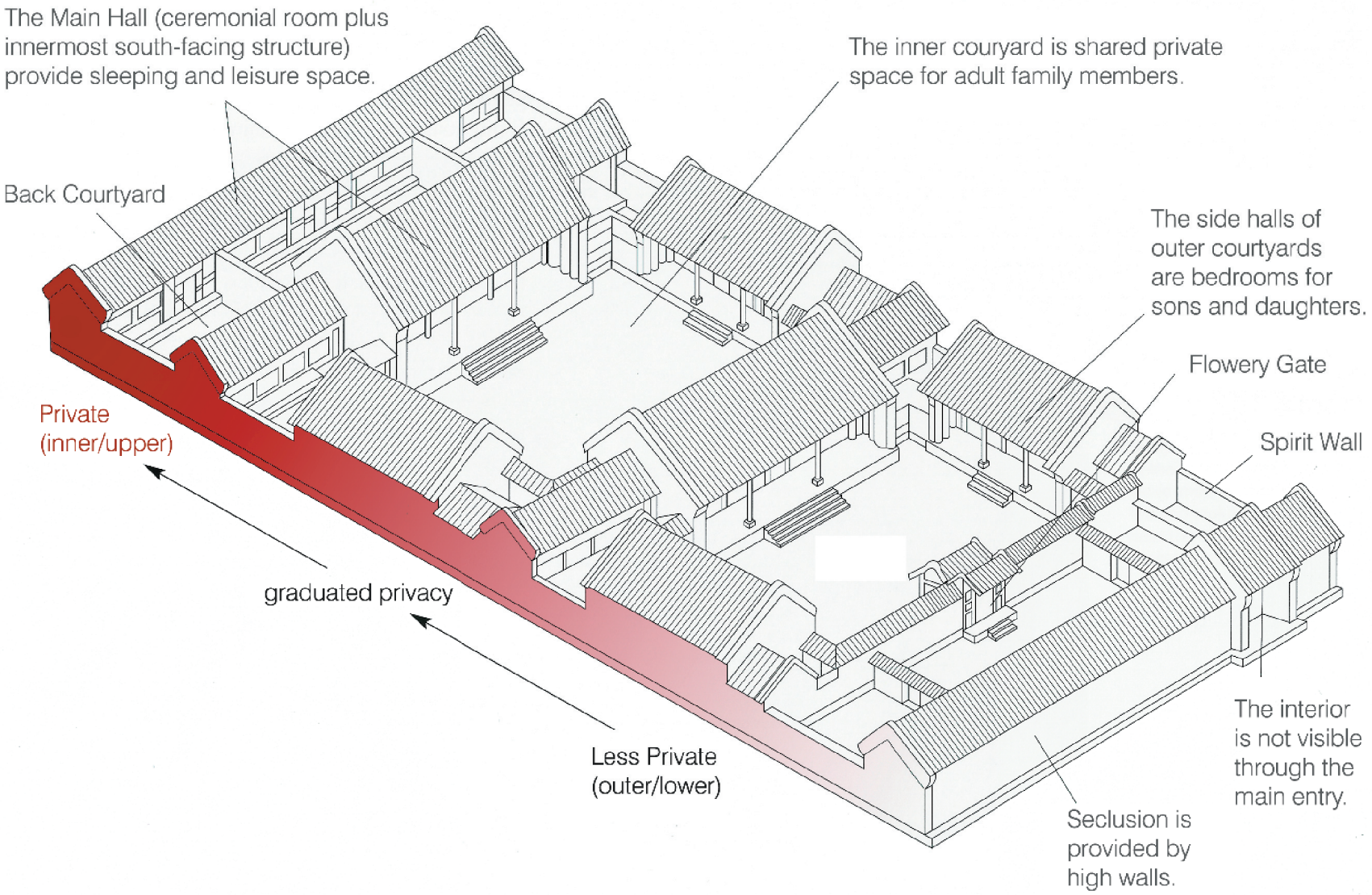
6. main structure_ living space for parents

7. small side rooms_ used for children and extended family members



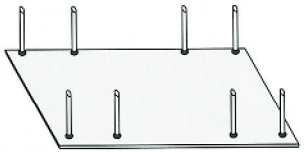
Enclosure

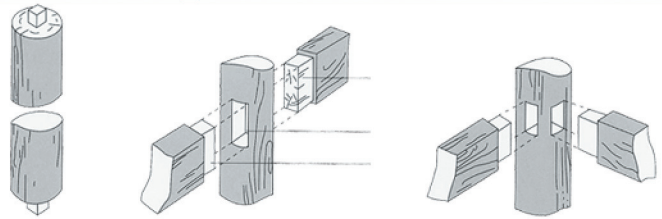
Axiality/Smmetry


The Main Hall (ceremonial room plus innermost south-facing structure) provide sleeping and leisure space.
The inner couryard is shared private space for adult family members.
Back Courtyard
The side halls of outer courtyards are bedrooms for sons and daughters.
Flowery Gate
Spirit Wall
Private (inner/upper)
graduated privacy
Less Private (outer/lower)
The interior is not visible through the main entry.
Seclusion is provided by high walls.

Jian_Building Module

A *Jian* is a building module representing the distance between columns, ranging in width between 3.3 - 3.6 m with a common depth of 4.8 m. Most courtyard houses used this building module and structures were comprised of at least three *jian*.



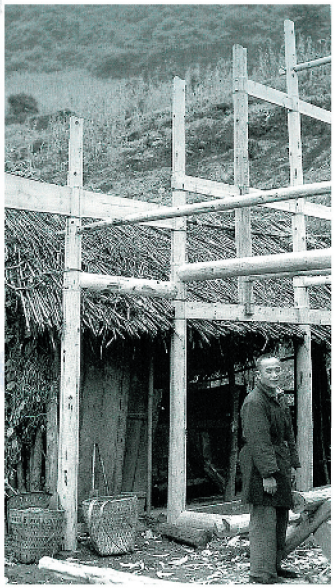


(tenoned column, butt-joined mortise and tenon, mortise and tenon corner)

Joinery

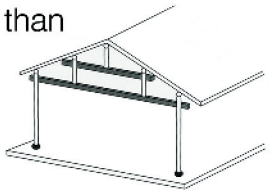
The use of such complex joinery techniques made it possible to assemble different sized pieces of timber together into an interlocking frame. These timber pieces as well as additional brackets are often highly ornate; these techniques have existed for 7000+ years.

Structure and Materials

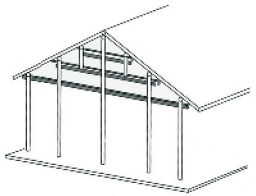


Timber Framework Systems

In higher quality dwellings, walls do not support the weight of the roof but are merely curtain walls set between a complicated structural wooden framework that lifts the roof rather than using the walls for this purpose. This allows for more freedom and flexibility in walling and fenestration.



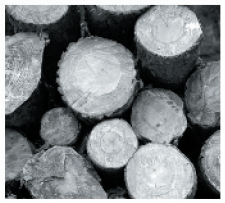
columns-and-beams wooden framework



pillars-and-trans-verse tie beams

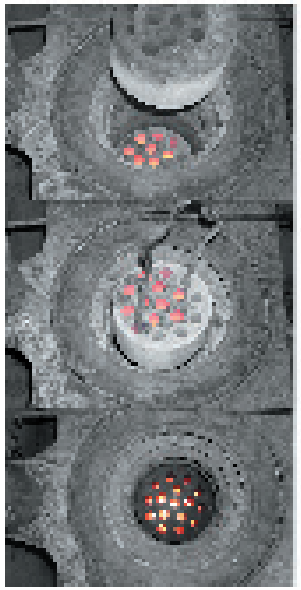
Materials

Chinese houses generally take shape from a conventional set of elementary parts- foundation, wooden framework, and roof- using readily available building materials such as earth, timber and stone.



Most homes are heated by a coal burner that must be attended to at least twice a day. This energy source has been a main factor in the pollution problem Beijing is currently facing. A cleaner, more efficient energy source must be implemented in future projects in order to reduce future pollution issues.

China's government has been taking steps to clean up much of this pollution before it hosts the Olympic summer games in August of 2008. However, there is controversy as to whether their efforts will produce any positive results before the games.



_need for density

This illustration shows the infill of courtyard houses that occured to accomodate the increasing population in Beijing. Fifteen people from two families now occupy this courtyard house, and only one of the three courtyards is still in use.

_structures built into the existing courtyard

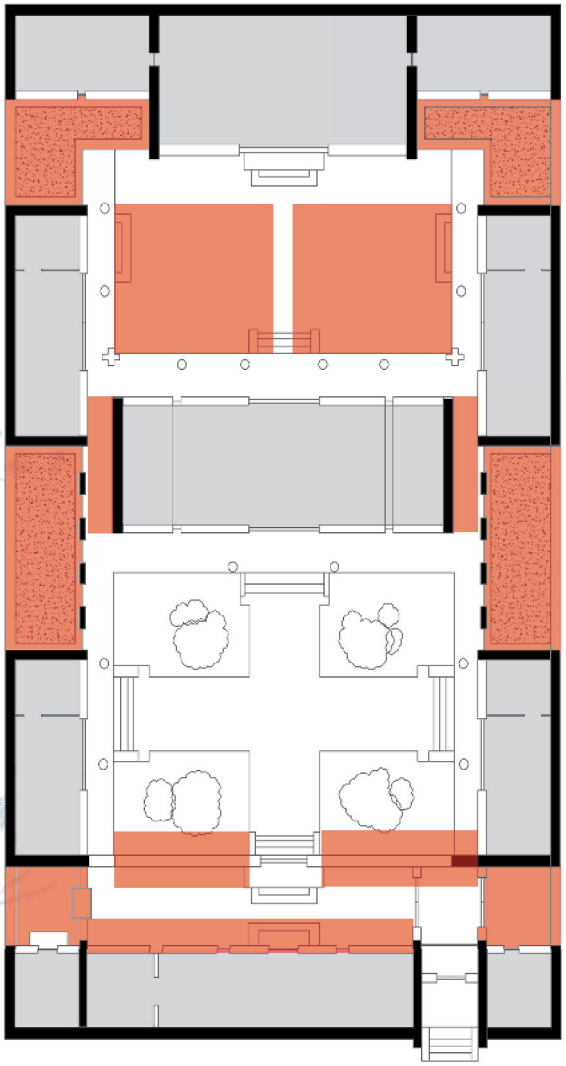


Image: Yan Chongnian. Beijing, The Treasures of An Ancient Capital. pp. 247

This narrow pathway was once the outer courtyard.

Evidence of the expansion of these existing structures is easily seen.

Areas that were once open are now enclosed to accomodate more residents in the home.

_political propaganda

This is a postcard I was given in Beijing portraying a political stance against the demolition of the siheyuan. Because all land and property on it was owned by the government, they had complete control over what became of the homes and the families residing there. As a result, many families were simply forced to leave their homes with little or no compensation.

_political propaganda

The symbol on the label in the upper left corner is the symbol painted on the houses the government decides to demolish. Many of these homes have been in the families for generations, and they are forced to leave with very little warning. My intended residences must be affordable enough for these people; people who were forced to leave their homes to make way for progress of which they may not be able to be a part.

The courtyard house has been a long standing part of China's residential history, and it contains many of the main elements that are so prevalent in traditional architecture. The ideas behind these elements were carefully considered when initially designing the future delevopment. The progression through spaces is seen everywhere in Beijing from The Forbidden City to the nearest street corner. Progression through a siheyuan was strictly followed and very prominent in their architecture. The shifting of scales is another important element to consider. The human scale is very much prevalent in these homes and this is an important element missing from many of the high rise structures seen in Beijing today.

The siheyuan is still a very important element which is given much regard, as seen in the propoganda postcards. It is still a very valid prototype; however, because of the massive density issues currently facing Beijing, it is not efficient. A new contemporary prototype needs to be developed.

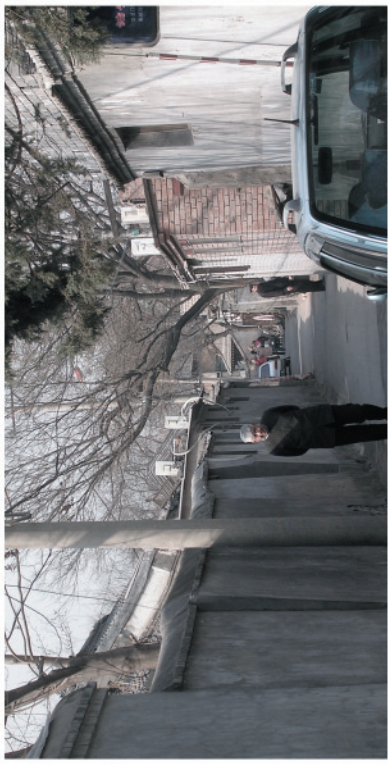
research documentation of existing Beijing hutong March 2007



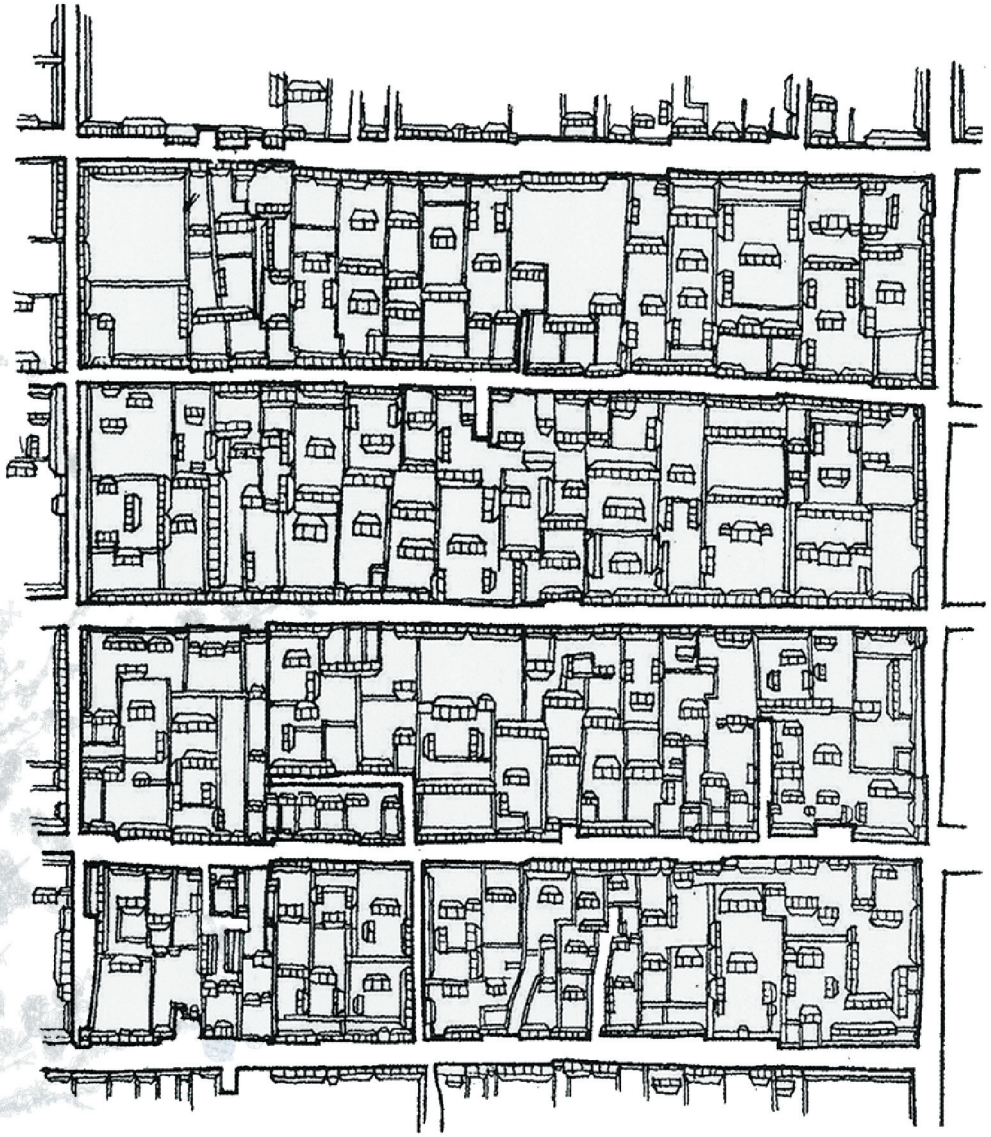








_urban fabric



Hutong Neighborhood Illustration and Aerial View

_urban fabric

Most traditional Beijing neighborhoods are comprised of many tightly packed siheyuan (courtyard houses) which collectively form a hutong.

_hutong (pinyin: hútòng)
narrow streets or alleys

In Beijing, hutongs are alleys formed by lines of siheyuan, traditional courtyard residences. Many neighbourhoods were formed by joining one siheyuan to another to form a hutong, and then joining one hutong to another. The word hutong is also used to refer to such neighbourhoods. The narrow hutongs were said to be “like ox hair” in that their number was beyond calculation.

While walking through Beijing's hutong neighborhoods for the first time, I was somewhat shocked. Many of the neighborhoods are far too run down to be salvaged. However, there was still a feeling present; a connectedness not only between houses, but in the streets and alleys. It is this feeling that is not present in current housing scenarios. The interactions that occur on the streets and the scale of the homes needs to be preserved in order to maintain this delicate relationship of the hutong.

Icons	Description	Significance
	Circular entrance (Moon Gate)	The shape, echoing a full moon, symbolizes infinity because when built next to water or mirrors, the reflection creates a full circle. Also, legend states that people who walk through a moon gate will be blessed with good luck.
	Screen wall (Spirit Wall)	The screen wall protects the house from evil spirits, as they can not turn corners. This wall also adds extra privacy for the family as there is not a straight view into the home.
	Curved eaves	There are many roof types that have evolved over time in Chinese residences. Some scholars have claimed that Chinese pay as much attention to the appearance of the roof as Westerners do to the facade. The curvature of the roof as well as ornamentation gives an indication of the rank of the resident.
	Decorated structural elements	The roof elements were ornately decorated with patterns and murals to designate the rank of the individual whose family resides in the home. They also represent wealth, prosperity, long life, and happiness for the residents.
	Drum Stone	The drum stone is another indication of the rank of the family figure-head. The father in this family happened to be the equivalent of an officer in the military because of the types of animals and scenes depicted in the carving of this object.

Icons	Description	Significance
	Buddhist symbols	Many Buddhist symbols can be found in Chinese homes. This symbol as well as the backwards swastica are an indication of infinity, or long life. The Chinese are very superstitious and therefore take consideration in placing objects and symbols around their homes.
	Progression of space	Progression is a characteristic of Chinese architecture found from the smallest residential dwelling to the Imperial City. Progression naturally allows for a hierarchy within the home beginning with public space and ending with private dwellings.
	Walled in structures	The Chinese share a very inward culture. The walls surrounding courtyard houses create a family unit, separate from the rest of the neighborhood. They create hierarchy and varying degrees of privacy. The walls originated due to environmental issues and were sustained due to social implications.
	Platforms	Platforms also create levels of hierarchy within Chinese architecture. They are used in residential as well as Imperial structures and help to set the buildings apart from the land, and they increase as one enters farther into the complex. This also maximizes the solar access.
	Courtyards	Courtyards came into existance because the Chinese sought a more intimate relationship with the natural world even in the heart of the city. He designed his home with the sky as his roof and the garden as a part of his world. This desire for privacy and peace was a natural response, especially within density.

Icons	Description	Significance
	Stair carvings	Stair carvings are found in Imperial structures more than residences; however, smaller scale carvings exist in higher-class courtyard houses. It is another way to display ones rank or to illustrate cultural icons or symbols of fortune or power such as “Two dragons over mountain and seas” shown left.
	Lattice doors	Particular attention is paid to doorways and windows because these are places where good or evil spirits were thought to enter. Therefore, the doors are often decorated with symbols to invite good and expel evil spriits. Lattice doors were often used to achieve this as well as induce circulation.
	Interior screens	The interior screens are used in a similar fashion to the exterior entrances. They are used to create divisions, but often use a paper material to allow sunlight to pass through the screen.
	Iconic dragons	The origin of Chinese dragons pre-dates written history, but they occupy the most important role in Chinese mythology. The dragon was a symbol of the emperor and his divine wisdom and power. Many legends draw this connection, and some emperors claimed to have descended from a dragon.

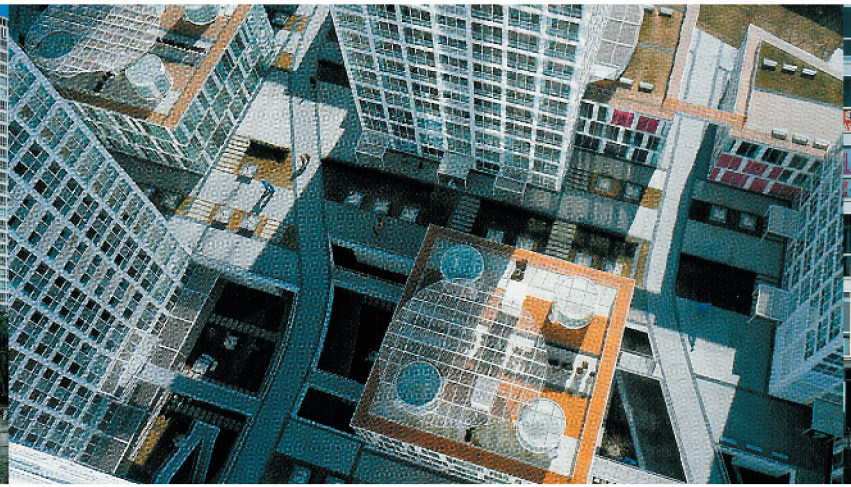
It is not the elements themselves that interest me, but the meaning and ideas behind them as well as the connections formed between them. Many of the elements are symbols of family rank, historic practices, or superstitious beliefs. However, there is a practical side to many of the elements that serve the structures well.

I do not intend to translate these elements into the future development, but to use the ideas behind the elements in order to create an environment that is better suited to its residents.

_Riken Yamamoto

Jianwai SOHO
Beijing, China 2000

Architects_ Riken Yamamoto; Field Shop; C+A; Mikan; Beijing New Era Architectural Design; Beijing Dongfang Huatai Architecture and Engineering
Program_ high-rise apartment towers (many of which combine small offices with living areas)
_ a three storey retail podium
_ office space\
_ underground parking


Project Summary

Jianwai SOHO, two miles east of Tiananmen Square, is a new living, working and shopping complex at the 'high end' of the market. The complex has become a much desired address for cosmopolitan urban living in China, forming a community for young professionals. The design of the high rise buildings appears sober, but it contains touches of luxury such as the marble cladding on the facade. However, the underlyind design is more radical than the appearance of the buildings, as the plan grid is slanted 25 degrees from Beijing's imperial cardinal grid. This aims to ensure that all towers recieve sufficient sunlight, to avoid visual intrusions from each other, and to align the buildings to the nearby Tonghui River. The complex is also radical in the fact that pedestrians are separated from cars which are parked on underground levels. This is a bold move in China, as private cars are viewed as a symbol of modern life.

Informative Characteristics

Because of the separation of cars and pedestrians, people on the street have unimpeded access to the shopping and office areas. Within the towers, various large openings are punched through the floors to the lower levels to create sky-lit gardens, whch bring light to the car parks. The apartment plans are typically a grouping of enclosed rooms with open plan living, dining and home office spaces. Some kitchens are part of the open plan, but some are enclosed in deference to the smoking stir-fry Chinese cooking, a characteristic that appears in courtyard houses.

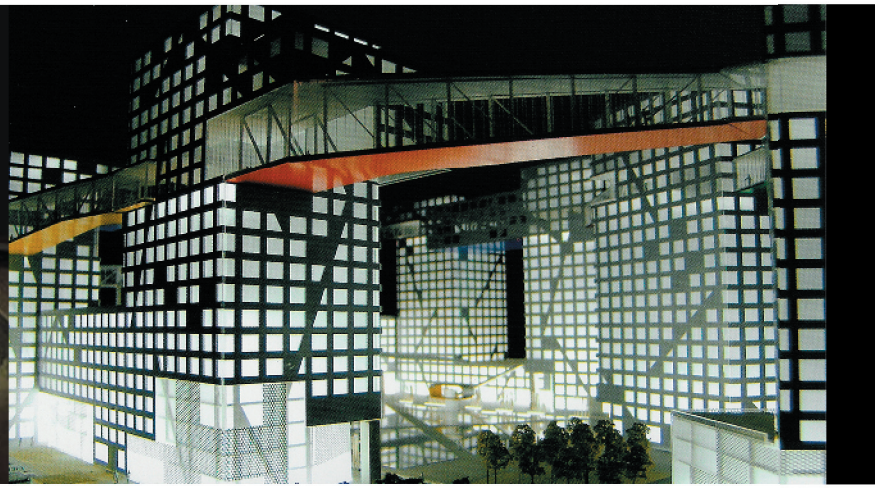
Analysis

In setting the complex on a grid offset from the Imperial grid, many beneficial aspects such as better sunlight access, avoidance of visual barriers and circulation was achieved. It also sets itself apart from the city in this and other subtle respects as opposed to presenting a large architectural spectacle. Courtyard spaces are also implemented, but with no regard to the traditional courtyard spaces. This complex is still a desireable place to call home for young professionals due to its location, ammenities and simple, clean design. Also, by eliminating cars from the main level, this opens the space for pedestrians to freely interact. However, it is difficult to discover any principles behind traditional Chinese housing in such a large complex.

_Steven Holl Architects

Linked Hybrid Housing Development
Beijing, China 2008

Client_ Modern Investment Group
Client's aspirations_ "ultra modern expression of 21st century ecological urban living"
Program_750 Apartments, Commercial, Hotel, Cinemateque, Kindergarten, Underground Parking
_210,000 square meters
_over 2,500 inhabitants
_8 towers linked at the 20th floor by a ring of cafes and services

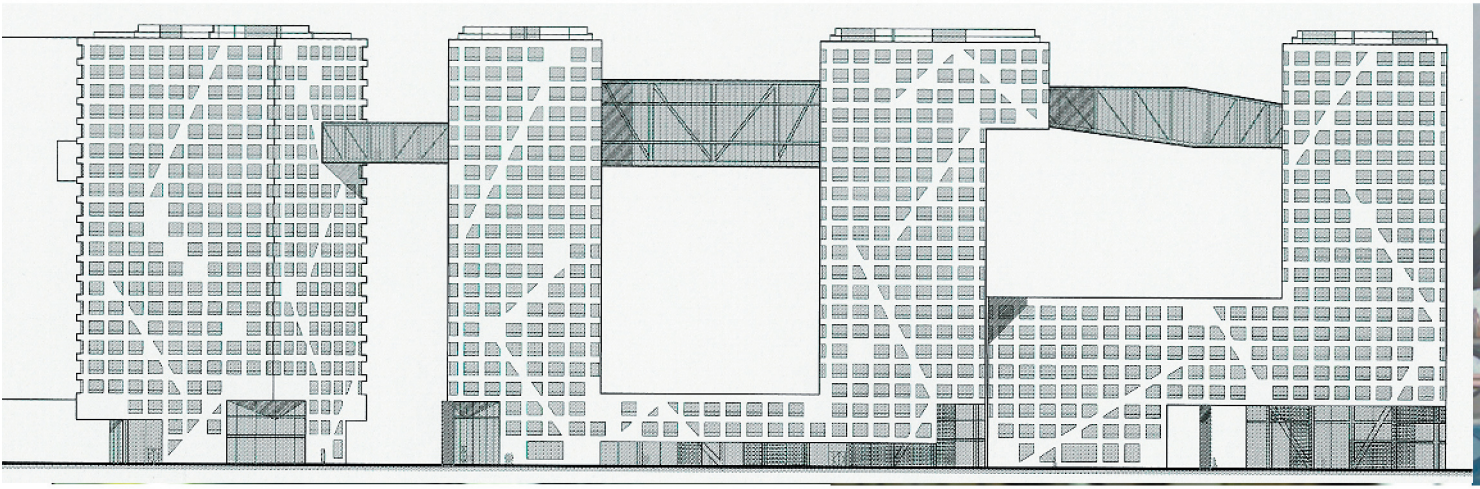


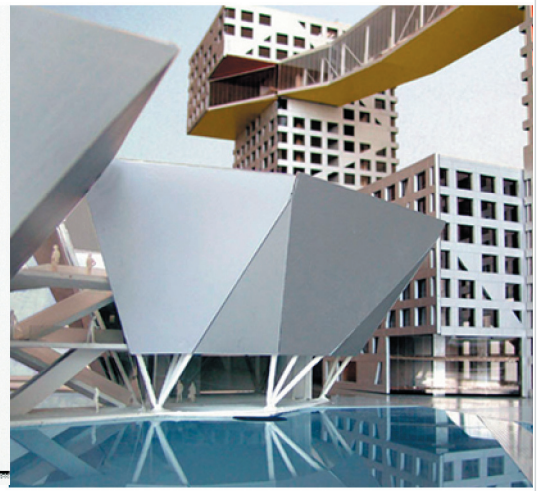
Project Summary

The Linked Hybrid project effectively forms a small community within the city of Beijing. The 20th floor of all of the buildings connect to one another through an open architectural ring filled with enough cafes and services to support the daily life of over 2,500 inhabitants. The project also includes five semi-private landscaped recreational areas or "mounds" that will be enclosed and limited to the use of the inhabitants. According to the architect, the eight towers are focused on the experience of the body passing through spacees, and they are organized according to movement, timing and sequence, generating random city-like relaionships. This complex includes ample space for housing as well as entertainment, recreation, revenue, and education. It is supposed to represent an ultra-modern expression of 21st century ecological urban living.

Informative Characteristics

The complex includes a "Garden of Mounds" - five semi-public landscaped recreational areas that loosely resemble courtyard spaces. The Mound of Childhood will be integrated with the kindergarten, the Mound of Adolescence will include a basketball court as well as a rollerblade and skateboard area, the Mound of Middle Age has both a coffee and tea house as well as Tai Chi platforms and tennis courts, the Mound of Old Age has a reading lounge and exercise machine park, and finally the Mound of Infinity is slated to become a meditation area with pavilions representing the five Chinese elements: earth, wood, metal, fire and water.





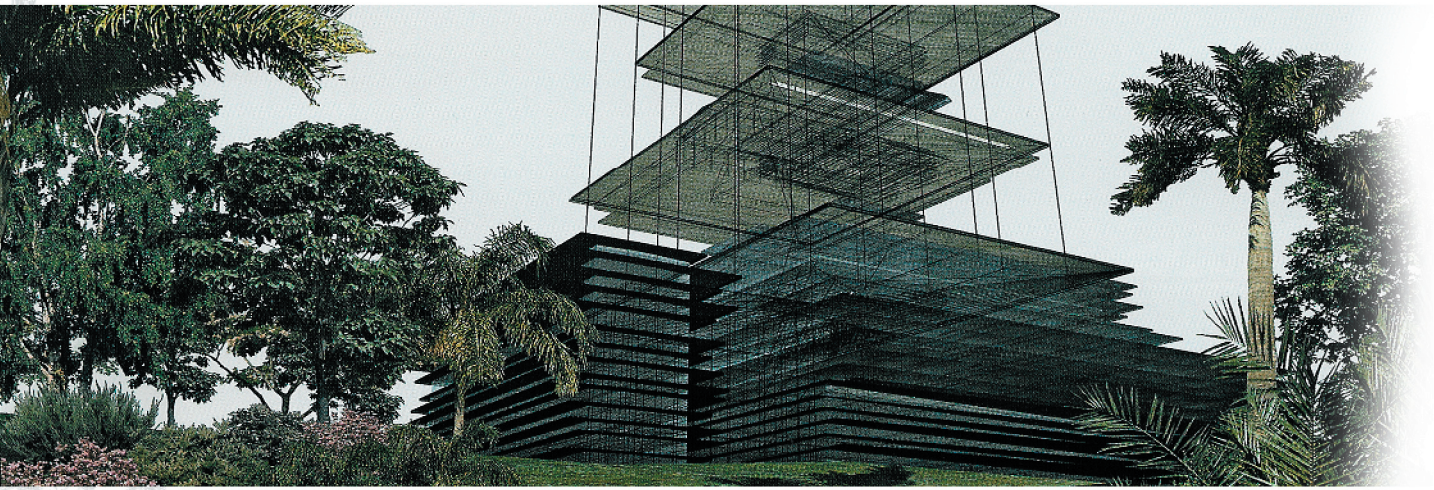
Analysis

This sky loop complex incorporates a few traditional aspects of Chinese living, but they are incorporated very loosely. It is possible that the idea of a courtyard was adopted into this series of public landscapes, but the architect never stated this intention. It was stated that the five Chinese elements were incorporated into one of these landscapes through the use of pavillions, but little information could be found on these structures. Also, the scale of this complex is almost too large to successfully implement aspects from a traditional single family dwelling in the same context. Through the use of geometric plans and angled strips in the facades, it is clear the Holl was trying to implement a new architectural vocabulary in Beijing.

_SITE

Private Residential Tower
Mumbai, India 2004

Concept_ The concept responds to the client's desire to have a multi-tiered, heavilly landscaped structure, similar to the ancient Hanging Gardens of Babylon.
Program_ main residence on the top platform, garden, helipad (remaining program_unlisted)
_ 110m tall
_ 26,942 sq. m

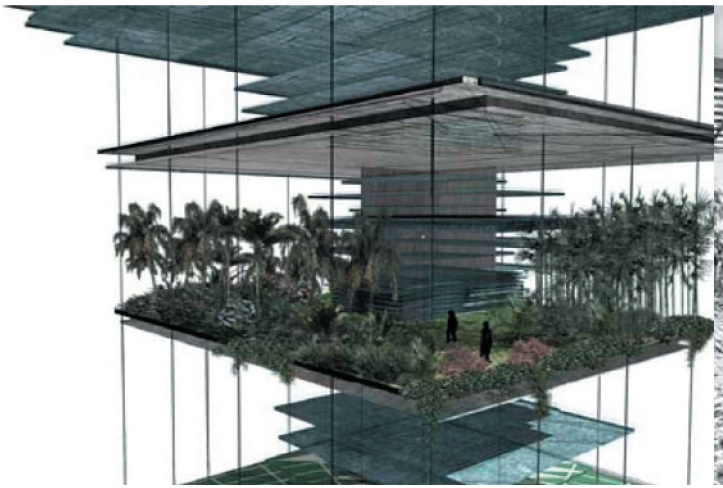


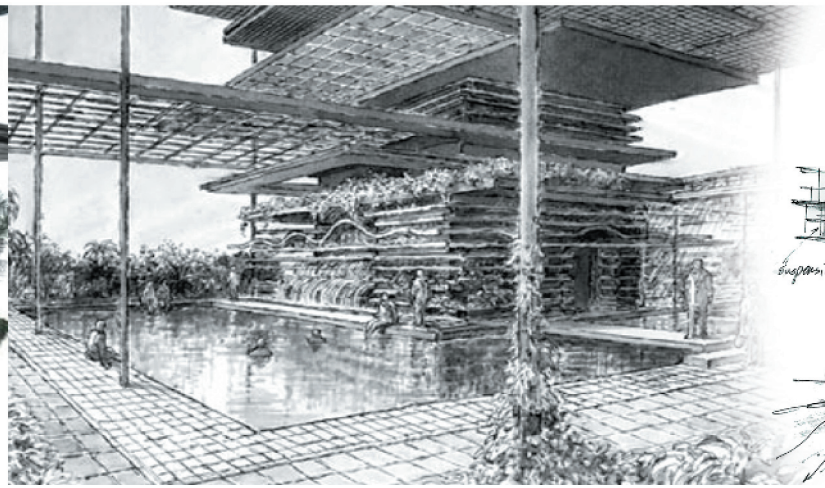
Project Summary

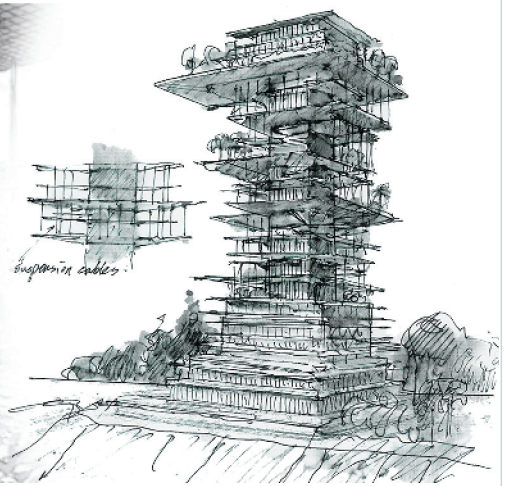
This residential tower is designed for one of India's most important industrial families. The building is located on a hilltop site, overlooking the city of Mumbai. It responds to the client's desire to have a multi-tiered, heavily landscaped structure – similar to the ancient Hanging Gardens of Babylon. For this reason, the entire tower is conceived as a garden in the sky and responds to Vastu principles in historic Hindu architecture. The seven levels of the residence are supported by a stratified structural spine, reinforced with a series of steel cables that include five "floating" floor planes and a variety of interim garden tiers, terraces, water features, recreational facilities, and enclosed, living areas that takes advantage of the most spectacular views of Mumbai and its waterfront.

Informative Characteristics

In keeping with Vastu principles, the central atrium of the top level residence is oriented on a precise north/south/east/west axis, which also allows light to penetrate all floors from a sky lit atrium. Within this tradition, the spine is regarded as the main source of support, leading upward toward enlightenment. The main residence is located on the top platform, covering an area of 4000 sq. m that includes a helipad and a garden.







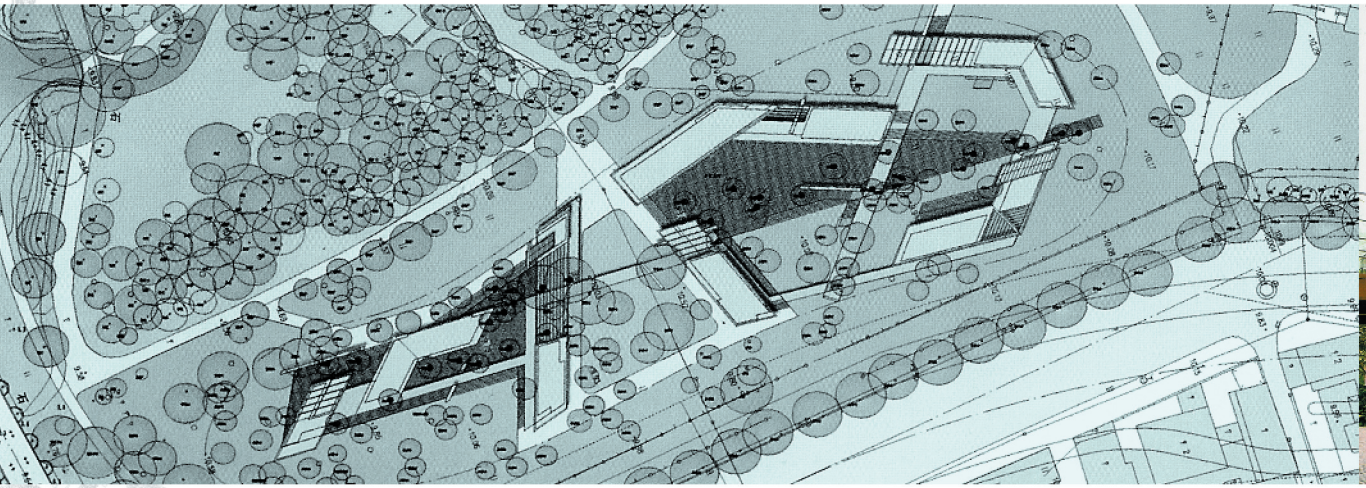
Analysis

This structure's conceptual design incorportates many of the ideas behind the Vastu principles in Hinduism. This structure appreciates and pays homage to its heritage within a new high density urban location. Each of the seven levels of the structure represent one of the elements of life, such as knowledge, light, sound, air, fire, water, earth, etc. The architects chose to take these elements and represent them in a vertical living situation held together by the 'spine' which is also taken from Hindu principles. This literal translation of ancient ideas into a modern living situation is one example of how these ideas can be conceptually molded into form.

_Zhang Zi & Zhang Ming

West Lake Southern Line Pavilions
Hangzhou, China 2002

Architects' guidelines_ "the structures should not be overtly aggressive, instead they should be made deliberately fragile to match the delicate landscape; they should be 'ordinary' rather than unique or avant-garde; and they should not be nostalgic, nor carry any historical burden."
Program_ two storey pavilions
_ tea rooms
_ cafe



Project Summary

The West Lake Southern Line Pavilions are a series of two storey lightweight structured pavilions, connected by walkways through the trees. Their lakeside location had to be handled delicatedly as the West Lake of Hangzhou is regarded as a supreme natural beauty, and has always been coated with Chinese literary legends. Leisure activities, such as a tea room and cafe, are accomodated within the pavilions. Despite their delicacy and refinement, these new pavilions are framed by the trees and water, and due to their openness and transparency, they do not provide a semblance of the internal experience of a classic Chinese pavilion.

Informative Characteristics

The architects of this complex chose not to reference the style of the Chinese pavilion (shown right), since they viewed it as a well-established type of architecture that serves only to allow the body and mind to meander in the landscape. They strived for an openness and transparency within the landscape throught the use of timber and steel structures.

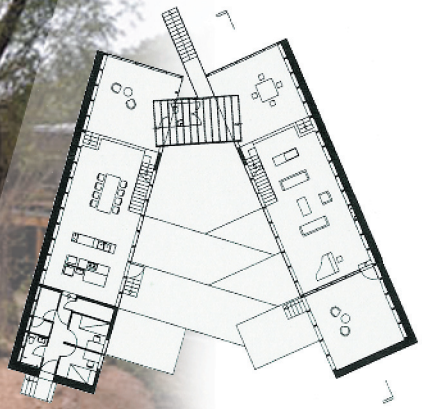
Analysis

The forms of the pavilions seem to designate fractured public spaces within themselves. These fractured courtyards may represent the present mindset of Chinese as they are becoming less of an inward culture and opening up to the world around them. The nature outside of the complex is celebrated more than the nature within, which is contrary to the courtyard house. However, this is a site in a more rural environment in which the natural surroundings should be the main focus. The walkways not only connect the structures physically and visibly, but they also create a more complete and connected feel to the complex and enhance it as a whole.

_Yung Ho Chang
Split House
Commune by the Great Wall
Shui Guan, China 2001

Commune_ The Commune by the Great Wall is a private collection of contemporary architecture designed by 12 Asian architects. The collection currently consists of 11 villas and 1 clubhouse which have been utilized as a luxury resort. The commune was instigated to display contemporary work of selected Asian architects to the world. Among the architects chosen were Shigeru Ban, Kengo Kuma, and Yung Ho Chang, whose work focuses on the courtyard house.
Program_ typical single dwelling: kitchen, dining room, living room, two sitting rooms, four bedrooms, four bathrooms

First Floor Plan



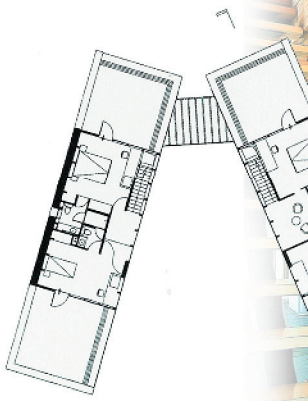
Project Summary

The split house is a single dwelling that is literally split in the middle in order to embrace the moutainous landscape. It is arguably a courtyard house except that the court is 'enclosed' by the *Shanshui*- the Chinese notion of landscape, meaning 'mountain and water.' The split house invites nature in as a tiny stream meanders into the entry and runs under the glass floor, and the existing trees on the site have been kept as part of the 'courtyard.'
This building has a rustic quality that has been carried through into the interior. The organizational disposition of this house is similar to that of any typical modern house, with grouped private rooms mainly on the upper level, and open plan living and dining on the ground floor. However, the lving and dining areas are split by the wide open space in order to create a dynamic interaction between the house and the courtyard.

Informative Characteristics

This building was chosen because the architect Yung Ho Chang is known for his interest with Chinese courtyard houses, and Beijing quadrangle houses in particular. He has utilized various forms of courts and light wells in his conceptual schemes, as well as in his built projects. He describes it as 'micro-urbanism,' whereby the courtyard as a building type offers the convenience of natural light and ventilation, as well as a certain degree of centrality, while a high urban density is ensured. It is also a self-imposed mission of Yung Ho Chang to create a 'contemporary Chinese architecture.' Therefore it is important to analyze his work in the split house as it relates to the traditional Chinese courtyard house.

Second Floor Plan

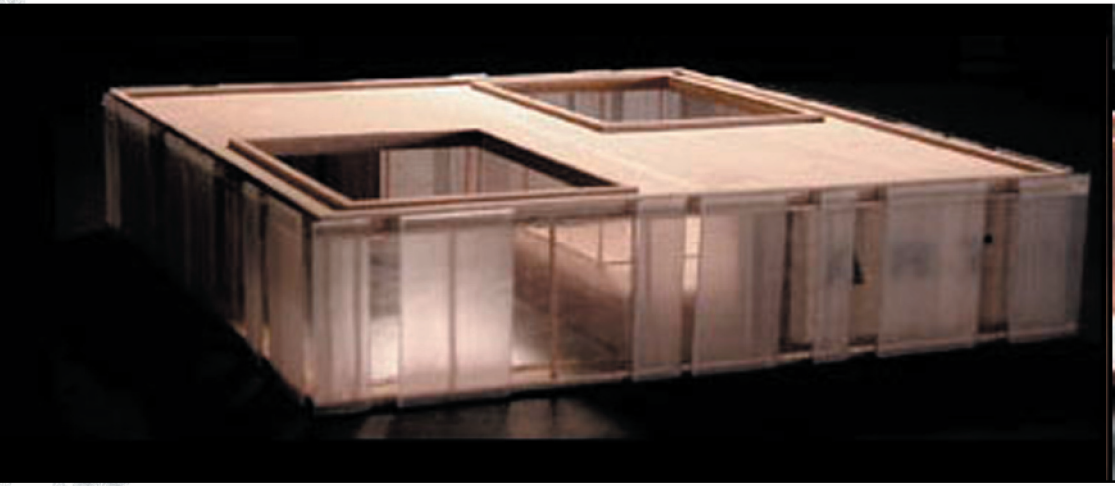


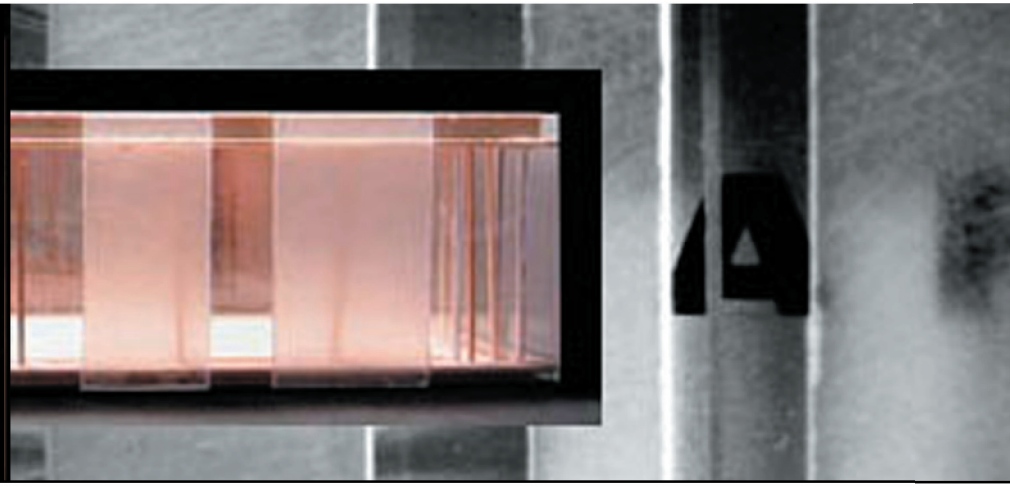
Analysis

According to Yung Ho Chang, the 'Chinese-ness' of the house results from the two thick rammed-earth walls and lightweight timber structural frames as well as the courtyard variation previously described. Although the split house does not physically resemble a courtyard house, several of the ideas are present. As to how successful they are, it is debatable. There is a fragmented courtyard that connects the independent structures. The space, however, separates the same functions from eachother (ie. living from living) as opposed to the courtyard that separated differing functions within the house. The courtyard also incorporates a portion of nature within the home and aides circulation, ventilation, and sunlight access, which were the main functions of the traditional courtyard. However, since this is not an urban site, the courtyard has the ability to open one side without neglecting privacy needs. A natural progression is also evident throughout the house and site. It is; however, very rustic in appearance and the exterior has a very rough, aged facade that may not portray a contemporary appeal.

_Johnsen Schmaling
The Courtyard House
Lake Forest, Illinois 2002

Architects' guidelines_
Program_ typical single dwelling





Project Summary/ Informative Characteristics

The one-story house in Lake Forest, Illinois (about 20 miles north of Chicago on Lake Michigan) is roughly square in plan and punctuated by two rectangular courtyards, positioned at opposite corners from each other. The placement of the courtyards allows the interior spaces to have views of landscape on all sides, filling the house with greenery. The exterior is a layered and seemingly random facade which veils the house while allowing selective views in both directions.

Analysis
I appreciate the simplicity of the proposal as well as the transparency of the space. The use of interior courtyards as a means of creating an interior landscape is an idea I am very interested in exploring.

I wanted to choose a range of projects in scale as well as inclusion of tradition. Many of the successful large scale projects in Beijing have eliminated cars from the site, an idea which I intend to follow in my complex. Some of the more successful projects were able to step away from the traditional aspect of the project without forgetting it completely. Other projects were foreign to the site and did not consider tradition.

The inclusion of nature was a strong theme in many of the projects, one that I am choosing to include in my project as well. The idea of the courtyard was used in many different configurations as well as elevations. This is an idea that I am pursuing. However, it seems that the larger the projects become, the more they diverge from tradition. This will be a challenge as Beijing is transitioning from a horizontal living configuration to a vertical living configuration. The use of some form of the courtyard in the high rise residential tower will need to be further explored.

research documentation of selected site December 2008

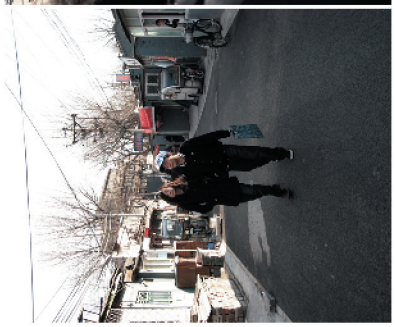




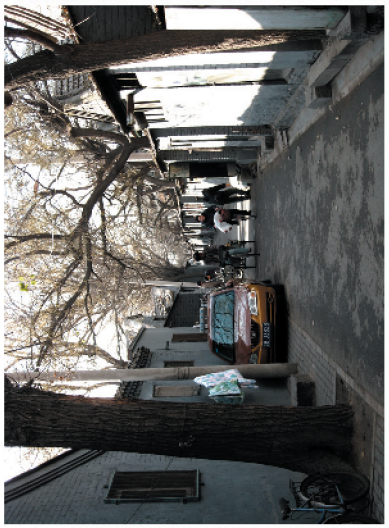









服装干洗



_city center

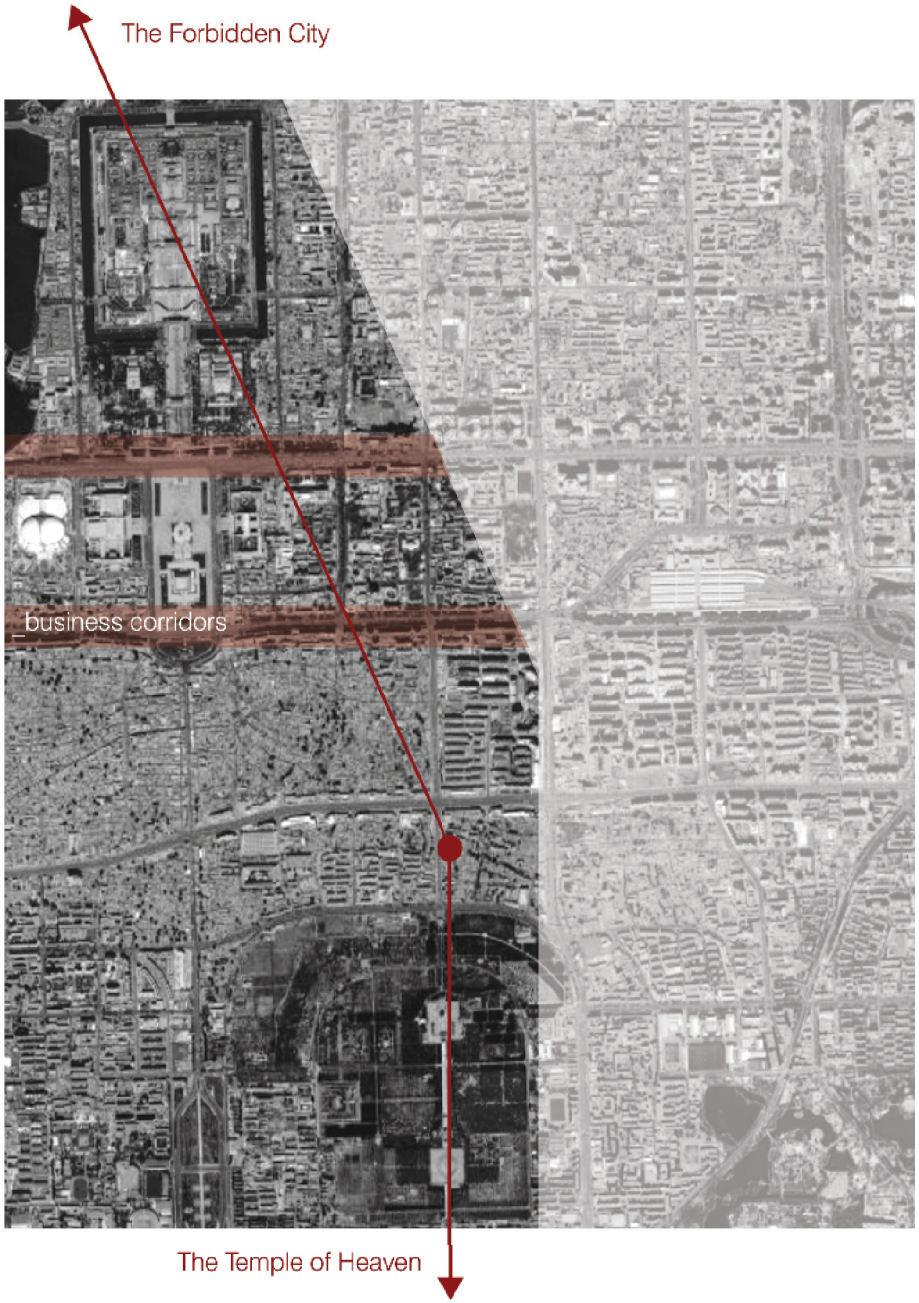
Second Ring Road

Forbidden City

Selected Site

Temple of Heaven

_site location



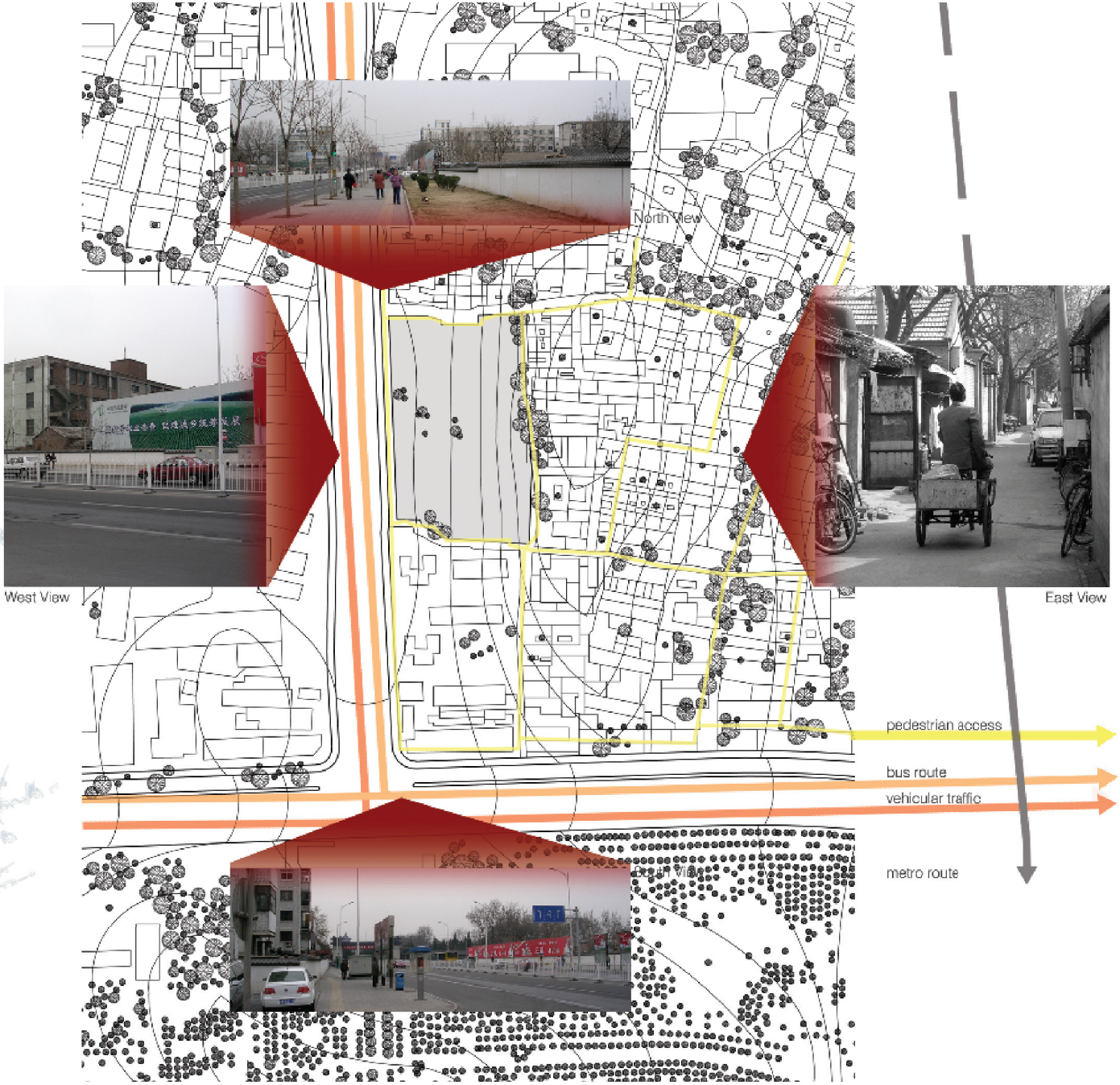
_site conditions

This site is located at a pivotal location within Beijing being on axis and in close proximity to the Temple of Heaven and also in proximity to The Forbidden City. The design of this site will recognize these historic landmarks while creating a living situation that is best suited to Beijing's inhabitants today.

It is adjacent to several main bus routes and within walking distance of the metro. It is close to a main business district in order to attract people who want to live close to their work, but it is far enough away that it is not traversed much by commuters. It is surrounded by a mixture of high density and low density projects, and since the entrance to the Temple of Heaven is on the east, it is not congested by tourists.

This site is at a latitude of 49.9 degrees. The temperature ranges from an average of 25 degrees Fahrenheit in the winter to 82 degrees in the summer. It is a similar climate to that of Lincoln, NE.

_site access


North View
West View
East View
South View
pedestrian access
bus route
vehicular traffic
metro route


low
density
housing
to business district
low density housing/
commercial
low density housing
(hutong)
340' _ 104m
medium
density
housing/
commercial
high density
housing/
commercial
low to medium
density housing
220' _ 67m

_existing hutong environment

existing commercial street

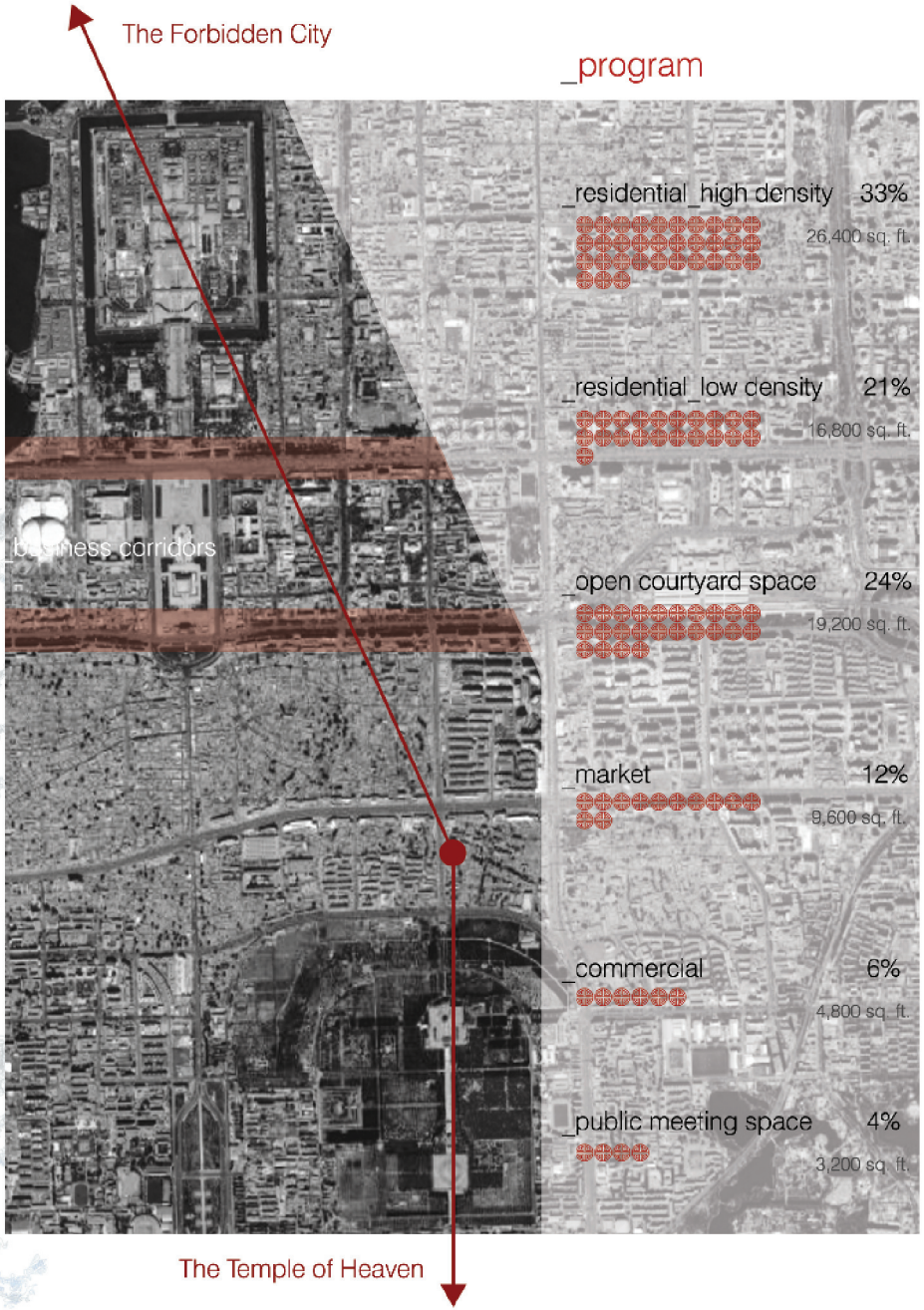
typical residential corridor

existing market area

I chose this site because of its connectedness with the city. It is at a pivotal location between two of the most historic traditional pieces of architecture; however, it is in an area that is being reconstructed in a very contemporary manner. There is a wall that runs along the West side of the site, separating it from the street. However, there are three access points into the site from the main street, and several more from the hutong neighborhood on the East. The connection between the existing hutong and the new complex is extremely vital to the success of the project.

The site is energetic and always moving; however, it needs more public space as well as community gathering space. There is some commerce within the hutong; however, this needs to be solidified and made into more of a location.

_existing hutong environment



_residential high elevation

_residential low elevation

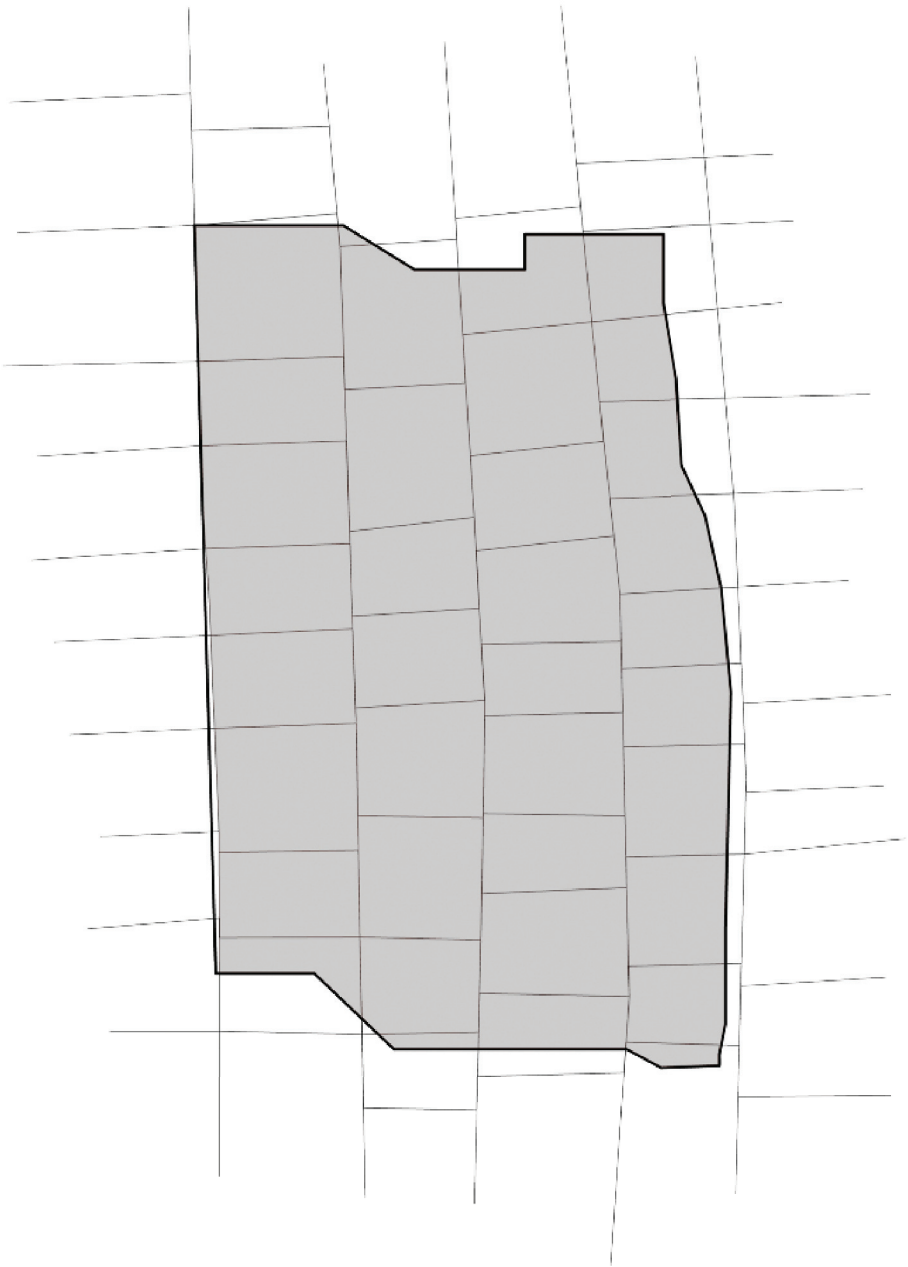
_open courtyard spaces

_market space

_commercial

_public community space

_existing hutong density



_hutong analysis

This image shows a typical Beijing hutong neighborhood grid overlayed on the site parameters. An area of approximate size to my site was analyzed in terms of people inhabiting the space and program that occured within the space.

Site (80,000 sq. ft.) _ contains approx. 34 siheyuan

Program of a typical hutong consisting of 34 siheyuan

typical siheyuan _ approx. 10 people (two families)

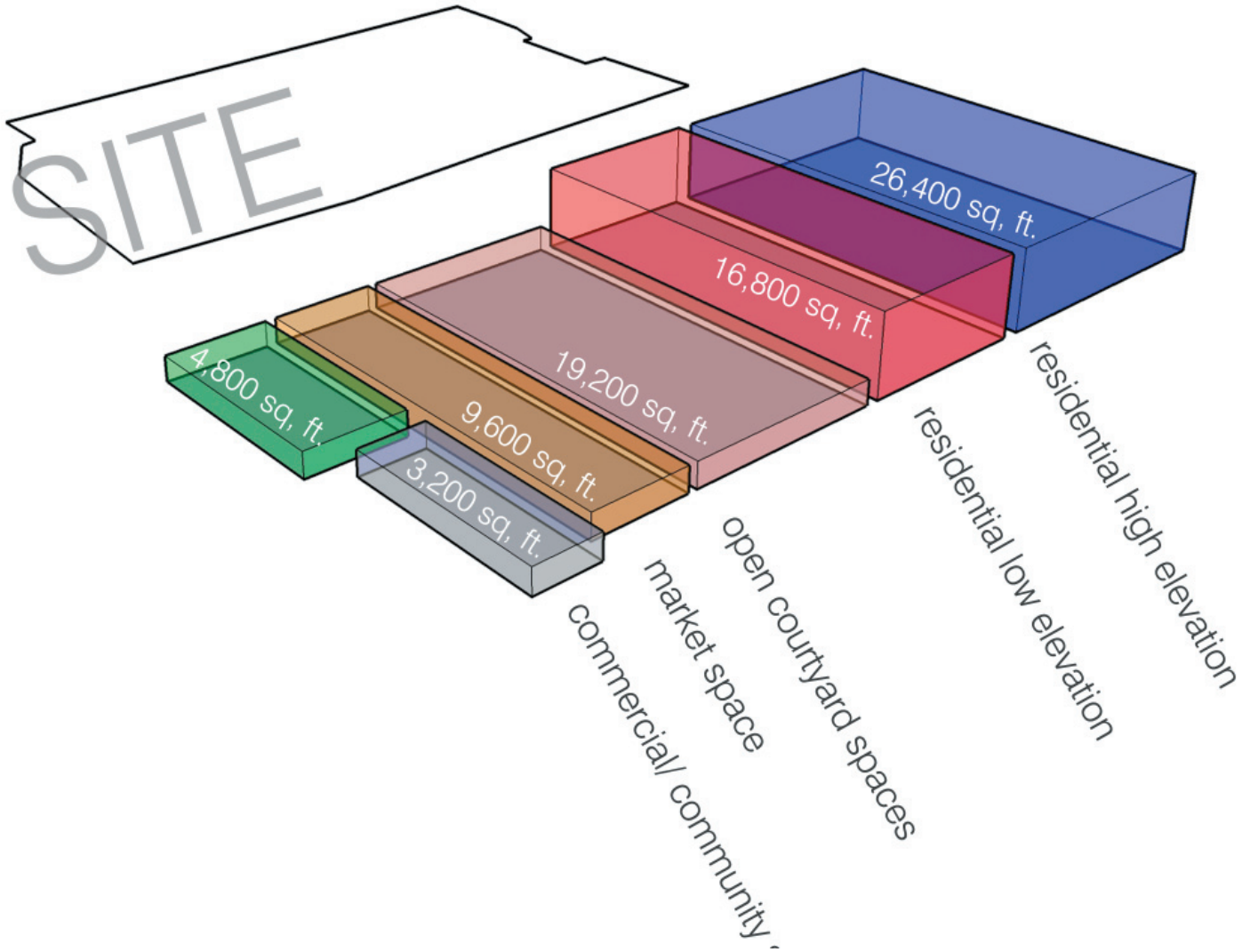
10 people per siheyuan x 34 siheyuan _ 340 people

20 small businesses

typical siheyuan _ approx. 600 sq. ft. courtyard space

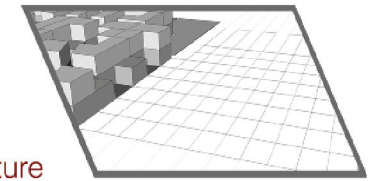
x 34 siheyuan _ 20,400 sq. ft.

_programmatic



The site is extremely dense for a one story plot of land. Residents are crammed into the courtyard houses, and they do not have much room to run or relax. Public spaces within this complex need to be developed. Because people in Beijing have transitioned from an inward looking culture to an outward looking culture, the residences do not need to be so confined. More opportunities for freedom within the complex need to be implemented. The living quality is not very high within this region.

Their quality of dwelling must be improved and clearly defined spaces for interaction need to be established. The courtyard spaces must be released from their walls and placed in a location that will increase a sense of community. The higher residential structure must also take on some of these public spaces. There is a perfect opportunity for some great views to various parts of the city. The area feels very closed and needs to take on a much more open quality to reflect the attitudes of the people.



_Jian grid structure

The jian was the underlying structure for the dimension of the bays in traditional Chinese architecture and this structure will become a determinant in the layout and partitioning of my site.

_Historical axis

It is important for my project, being on such a pivotal site on axis with the Temple of Heaven, to pay homage to both this structure as well as the Forbidden City, which can be seen from several stories high.

_Courtyard space

The purpose of the traditional courtyard was to contain one's own piece of nature within the home. The incorporation of this concept into the future high density development will determine a large part of its success.

_Hutong connection

Connections to the adjacent hutong are vital to retaining some of the character and scale of of the existing neighborhood. This is essential to a project which seeks to create a contemporary development which relates to this historical example.

_Incorporation of nature

The incorporation of nature into the complex is one of the key ideas which was also present in a smaller scale in the traditional courtyard houses. Sustainable concepts such as natural lighting and ventilation will also play a large role in the design process in an effort to reduce future pollution rates.

_Materiality (re-use)

The use of materiality greatly affects one's perception of space. Therefore, it is important for me to have a contrast of materiality that best represents a contemporary complex that references tradition. Re-use of material within the existing hutong will also hold importance.

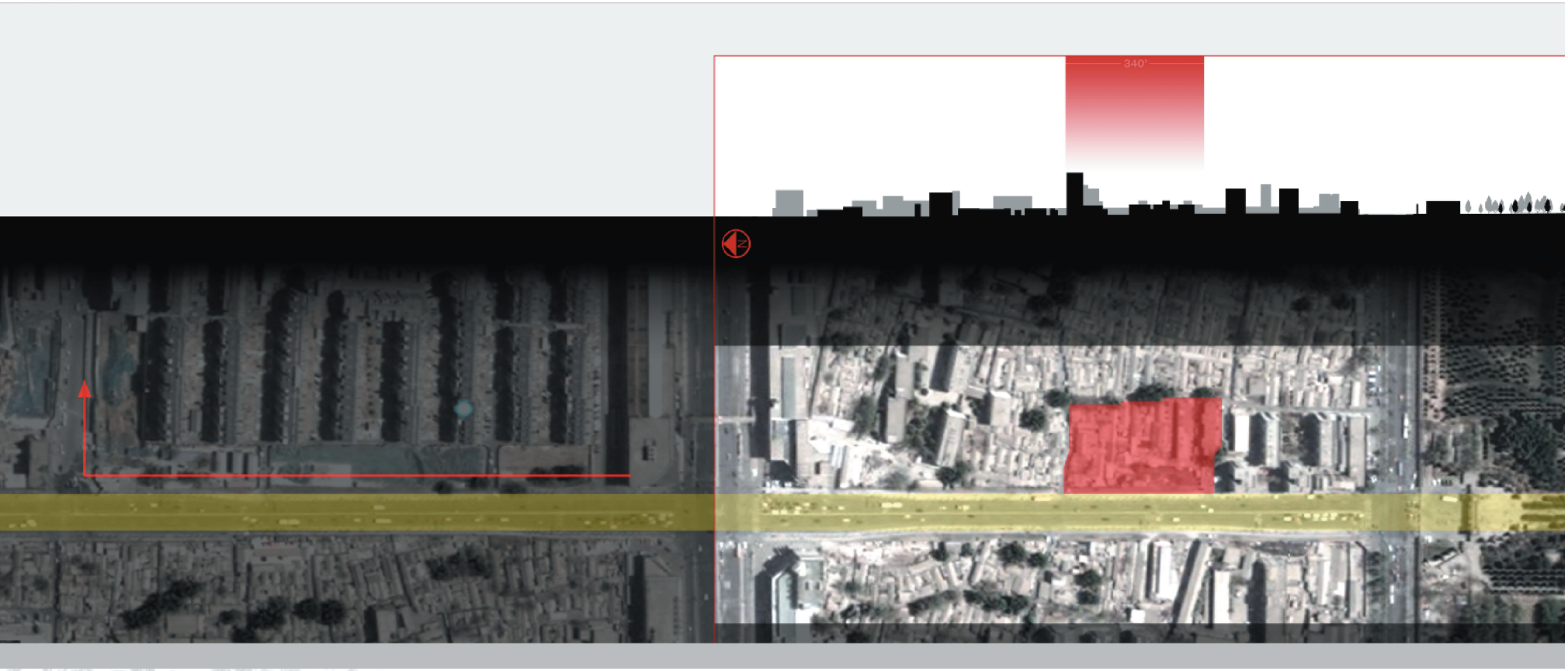
It is my intent to create an urban housing development that takes into consideration Beijing's past traditional building techniques. Through my analysis of a traditional siheyuan, I have identified the core ideas behind the structure and determine which of these ideas are vital to carry on and implement into a contemporary urban high density development. Analysis of the hutong also gave a deeper insight into the workings of many siheyuan and the connections that form between them. I will explore different adaptations of the courtyard in both a horizontal and vertical realm as well as interpreting aspects of the courtyard house into Beijing's current society. This complex will act as a prototype of contemporary urban Chinese dwelling.

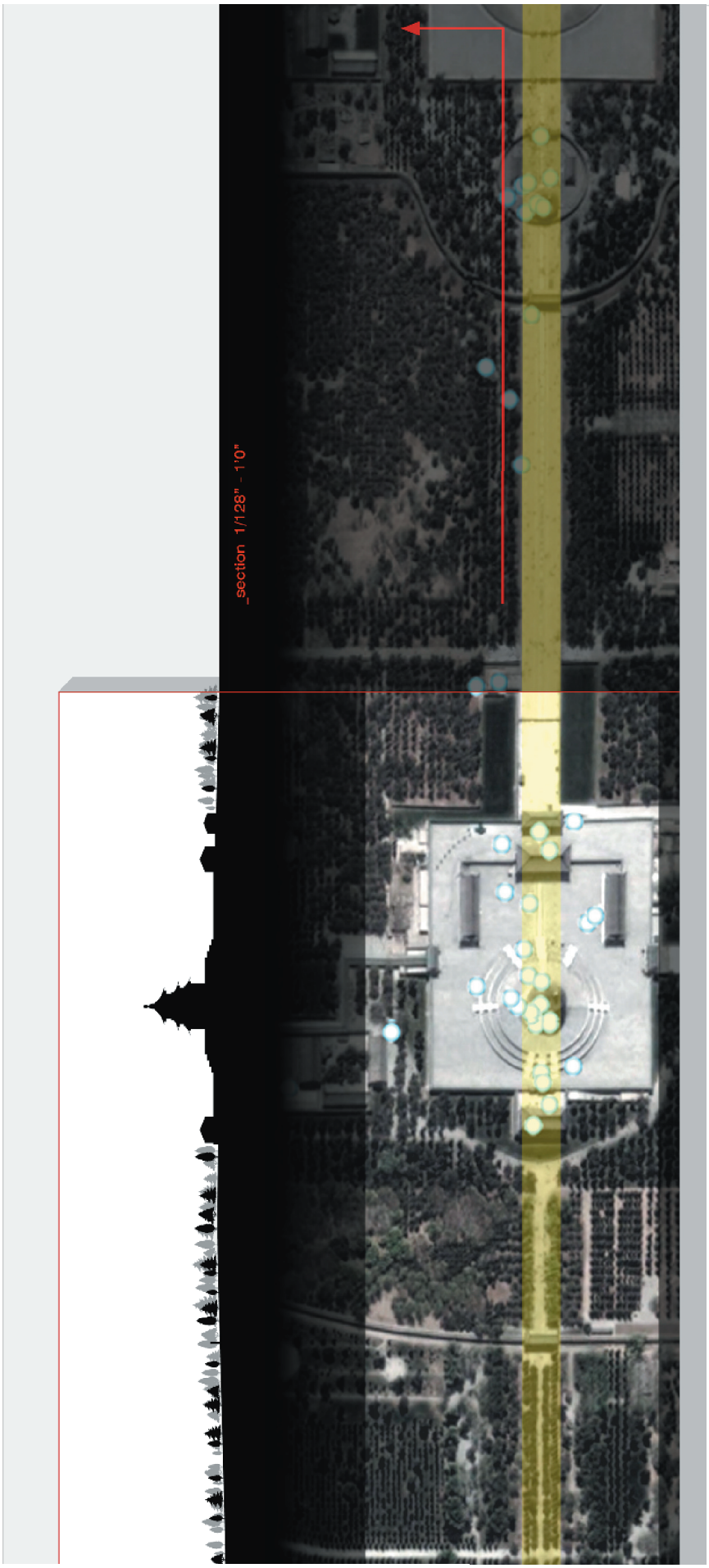
This project will be comprised of two adaptations:

A low elevation (3 story max) portion that deals with the reconfiguration/ re-adaptation of the traditional courtyard house into a dense, community oriented complex through a contemporary approach.

A higher elevation (9 stories max) portion whose purpose is to approach the use of the courtyard space into a vertical scenario while maintaing a certain scale and progression to that of traditional structures.

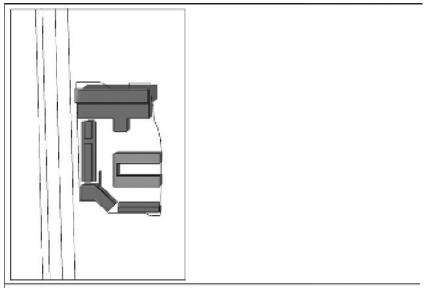
_site section along axis




_section 1/128" - 1'0"

_design progression

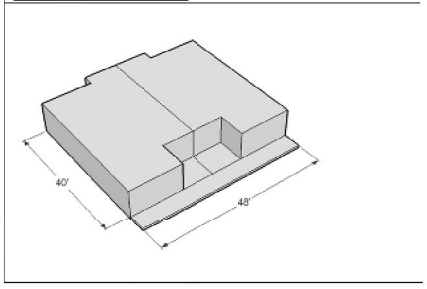
_development of massing model



_development of axis pathways

_development of modular units

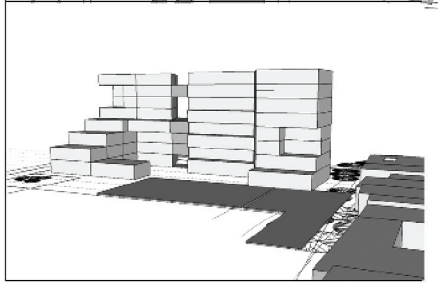
_development of unit layouts



_development of low density

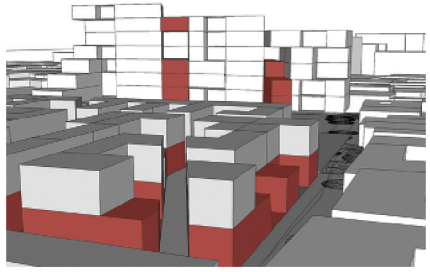
_diagonal paths reference the Forbidden City at 22 degrees

_development of high density

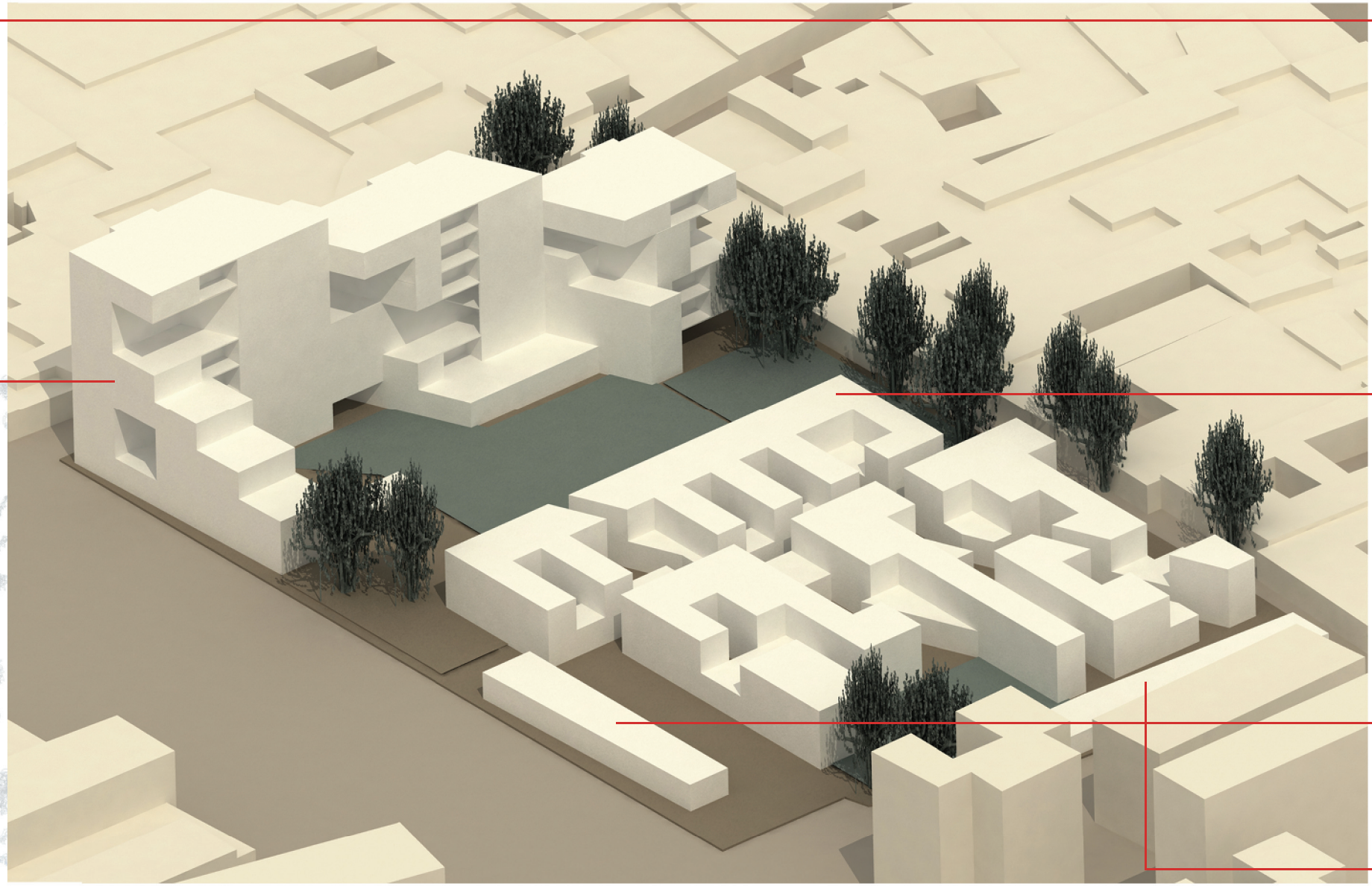


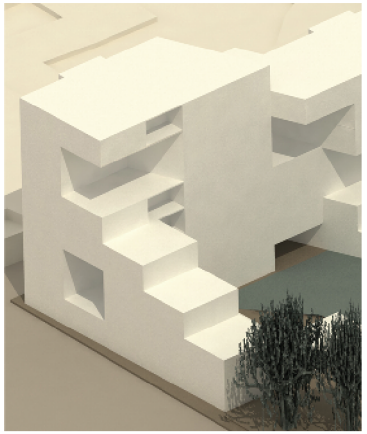
_roof plan of low density housing

_floor plan of low density housing



_programmatic placement

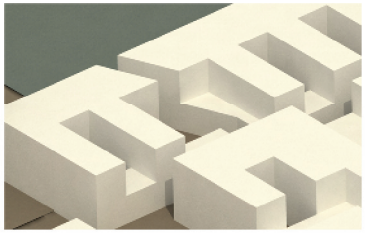




_High density residential

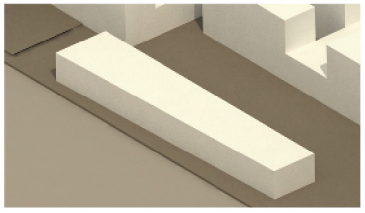
This is the largest structure in the complex and will house over 200 people. The structure itself is limited in width to 40' inorder to allow natural ventilation to occur. This building sits on the north side of the site and facilitates the needs of the community as well as the complex. In addition to housing, the lower units of this strucure will accomodate a combined child and elderly care center, a small gym, community meeting space, and limited parking.

The structure pays homage to the two historical sites which it bridges. Open air courtyards on the upper levels are alligned to create views of the Forbidden City. The structure is also sensitive to the nearby hutong neighborhoods by presenting an open air courtyard on the East and allowing views and access to these historic neighborhoods.



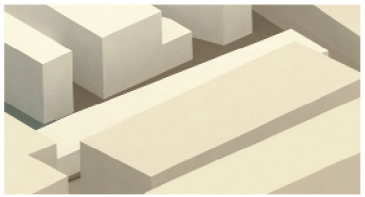
_Low density residential

This structure interacts directly with the hutong neighborhoods to the East. It maintains a lower height and begins to take on similar characteristics to the hutongs. The grid for the structure is based off of the traditional building block, the Jian, and axis are cut through the structure in allignment with the Forbidden City as well as creating more direct routes throught the complex and instilling the idea of the crooked hutong streets. A very layered approach was taken with the courtyards on multiple levels and parts of the building were removed to allow sunlight to freely flood the courtyard.



_Commercial space

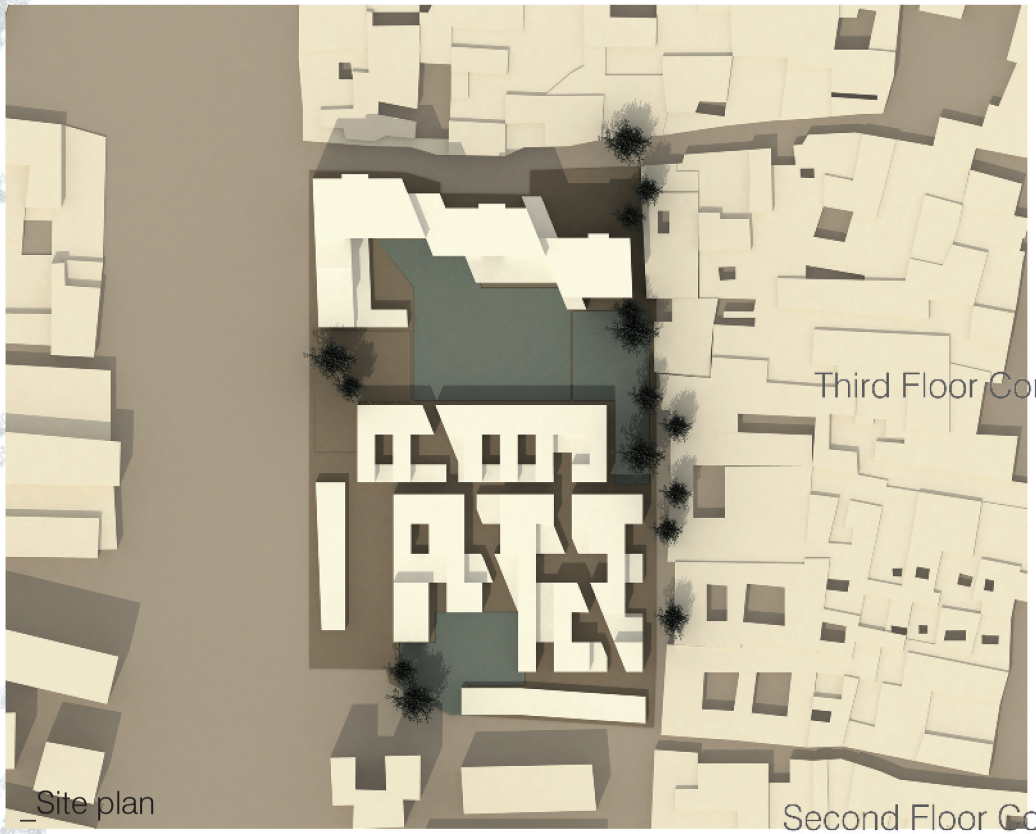
This structure will accomodate families with small businesses, as living quarters will be provided above the commercial units. The structure will be one of the more public faces of the complex as it acts as a buffer between people passing by and residents within the complex.



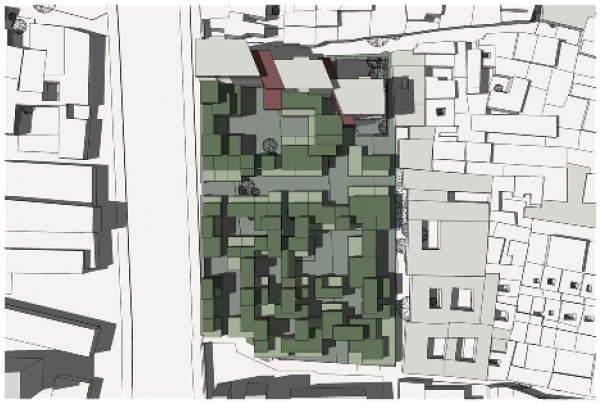
_Market space

This building will primarily accomodate daily needs of the residents such as groceries and other market goods. It will remain a single story structure to allow light into the structure. This building will act as a strong connection between the neighboring hutongs and the complex as the market space will be open to the public as well as residents.

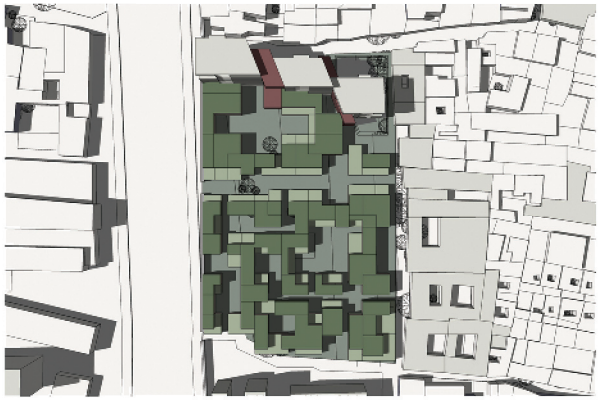
_site plan progression



_Site plan



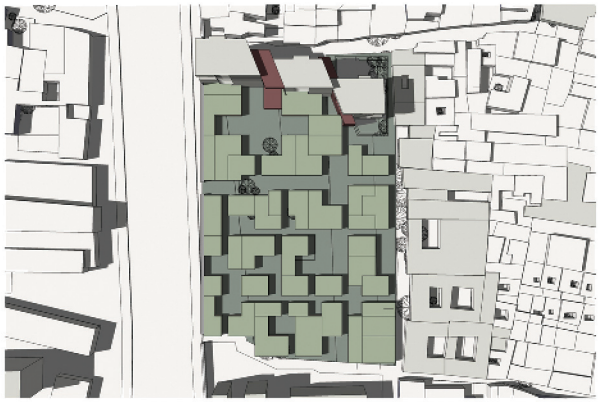
Third Floor Configuration



Second Floor Configuration

The site plan shows how the low density building has a similar presence to that of the hutong but is breaking away along a shared axis with the high residential structure. The lower structure ties into the urban fabric while the high density structure is turning to a new language that recognizes The Forbidden City as a symbol of tradition.

The progressions on the right portray the shift in design methodology. The diagonals were kept purely to the tower where views of the Forbidden City can be acknowledged, while the lower portion began to form small blocks based upon the jian dimension with various courtyards connecting the spaces. The upper levels were designed for optimum daylight access to the courtyards.



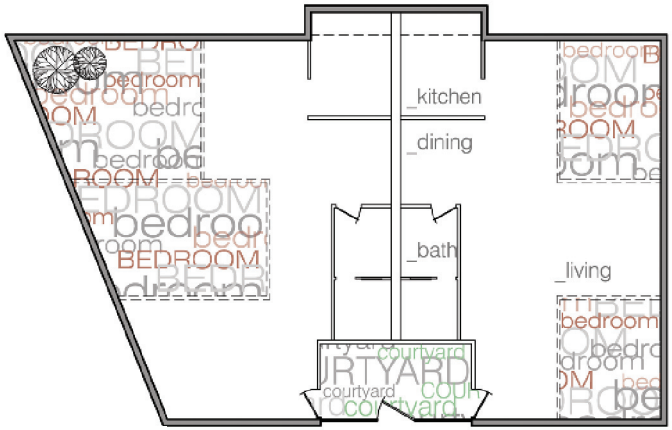
First Floor Configuration

_floorplan options

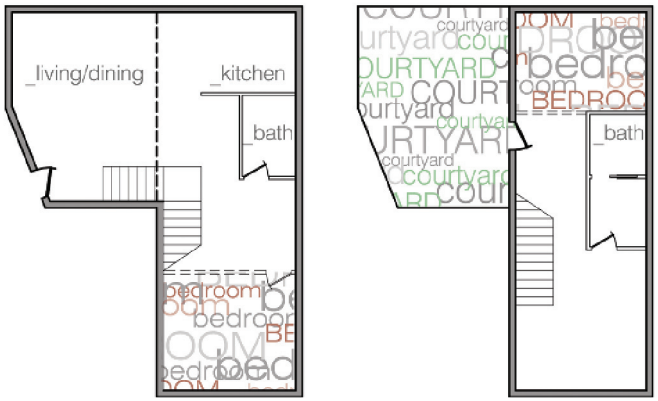
The floorplans follow a similar progression; however the layout changes according to the spatial configuration of the space. The high rise unit allows for an entrance courtyard, shared by two families. The kitchen space is extending from the unit in order to accommodate an area that can be enclosed for stove top cooking.

The lower units progress from the lower level up to a private courtyard space on the upper level. Each unit has access to an outdoor courtyard on the ground floor as well.

Several unit types will be designed for the complex in order to accommodate the extreme demographic from extended families sharing one roof to a working class couple who only need limited space. However, most units will accommodate a family consisting of a mother, father, and single child, as this has become the most common scenario.



_example of normal and irregular high rise floor plan

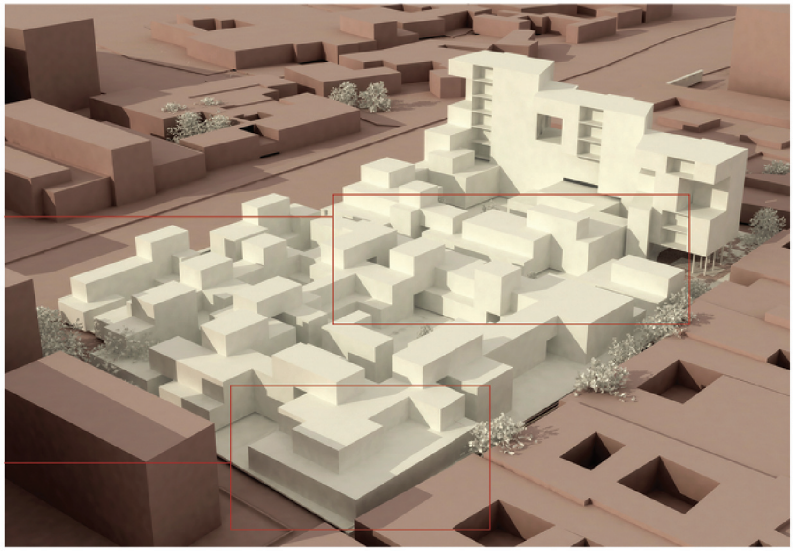


_example of normal and irregular dual level low rise floor plans

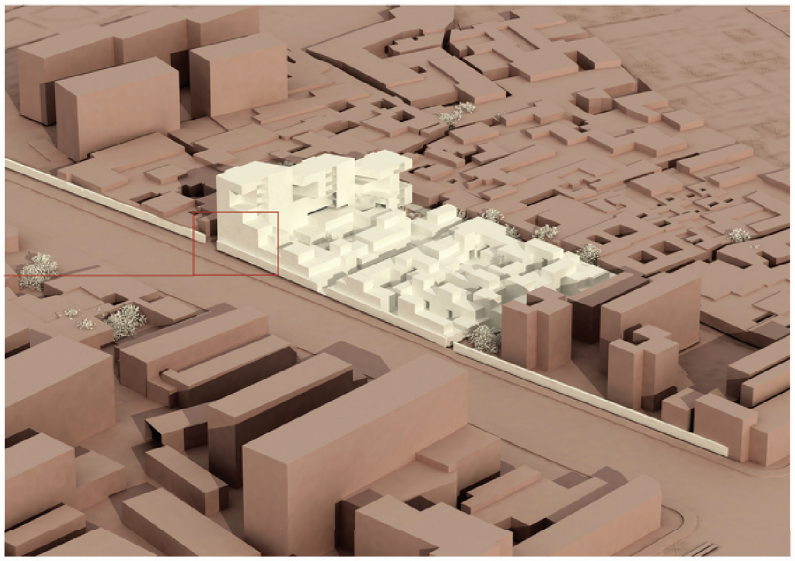
_programmatic placement

commercial corridor

public market

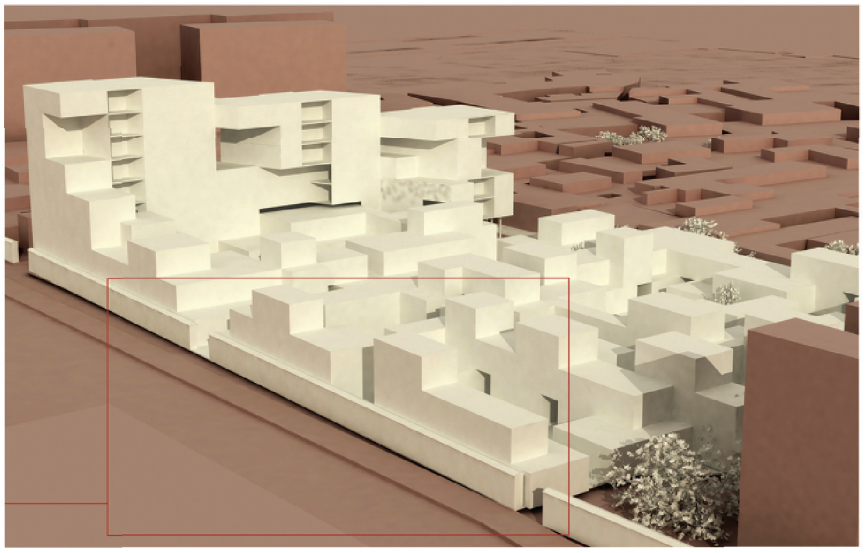


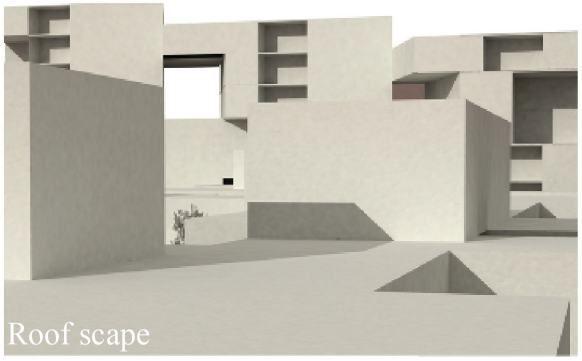
community space



_programmatic placement

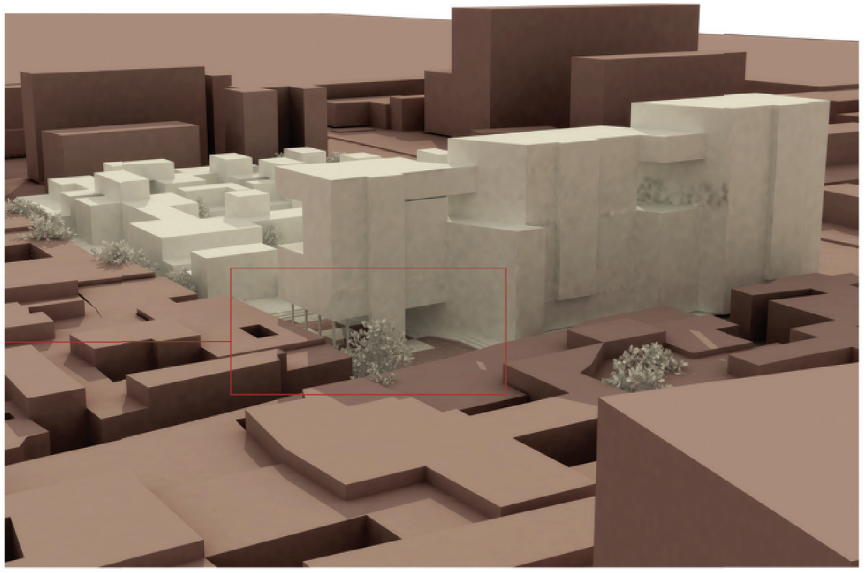
access/ the wall

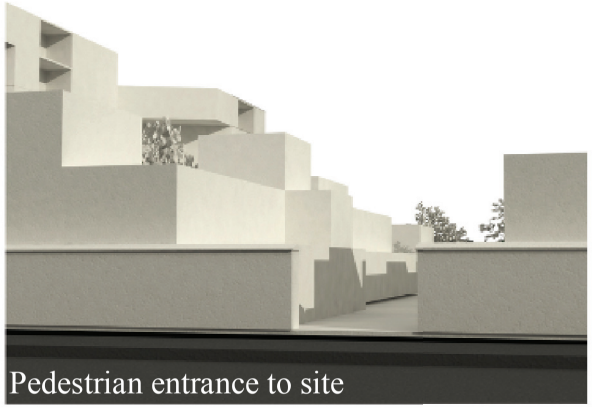




Roof scape

public courtyard

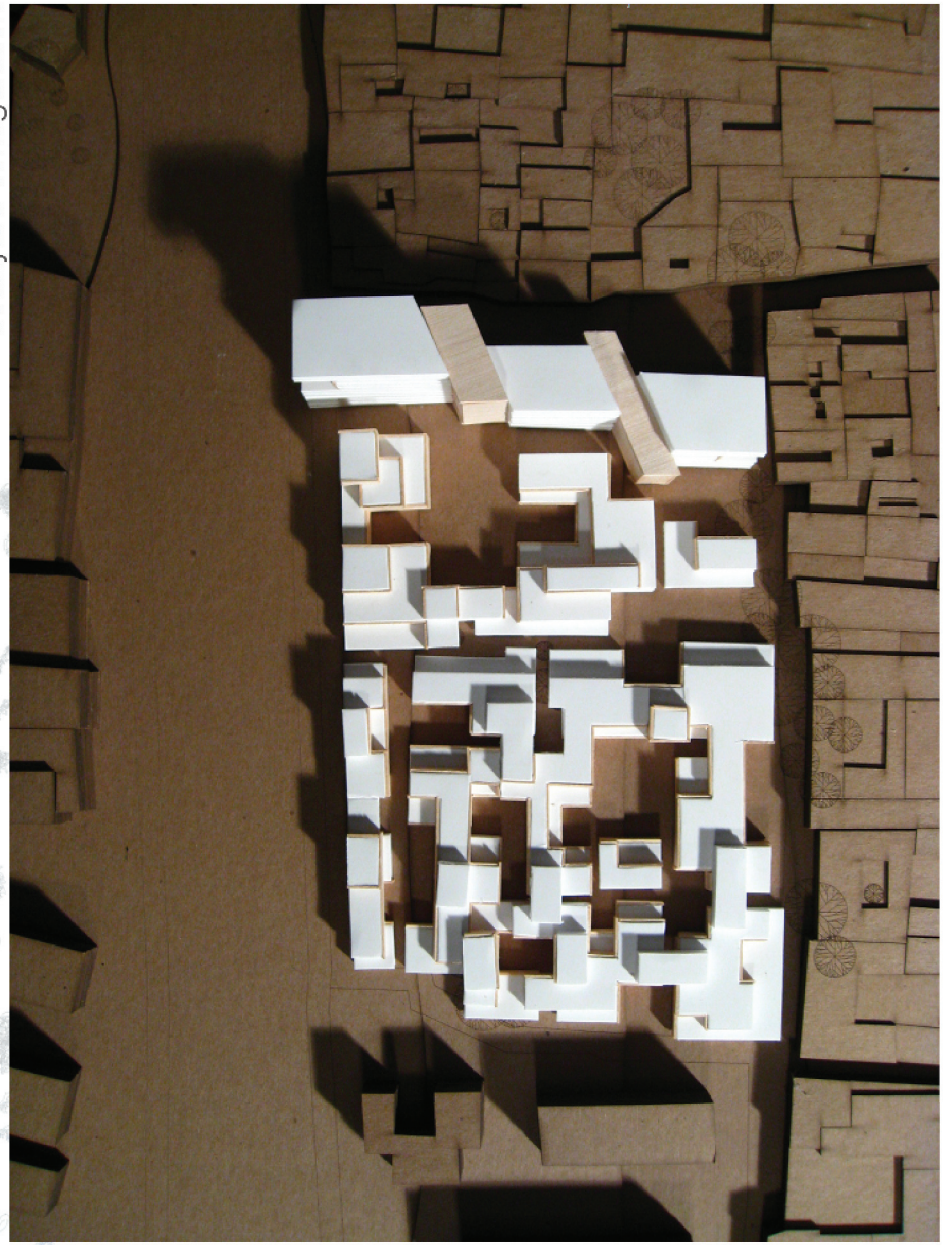




Pedestrian entrance to site

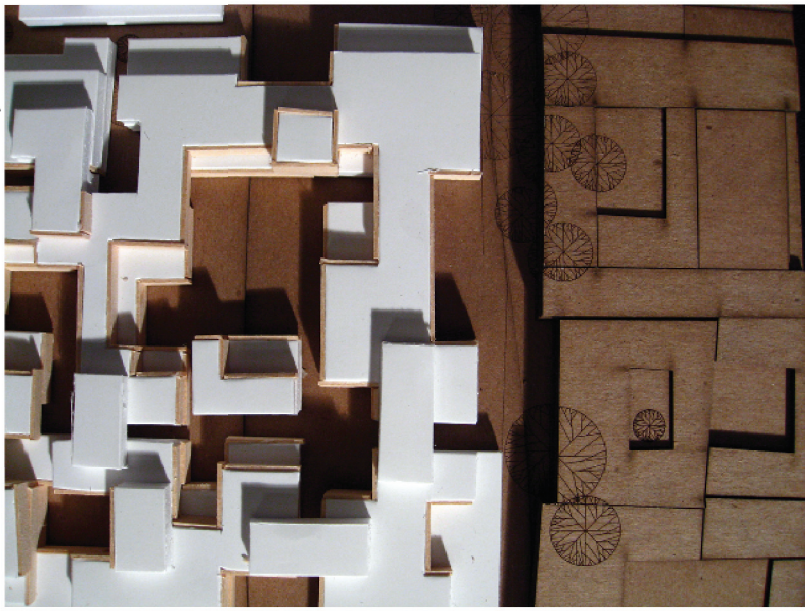
_site model

courtyard configuration

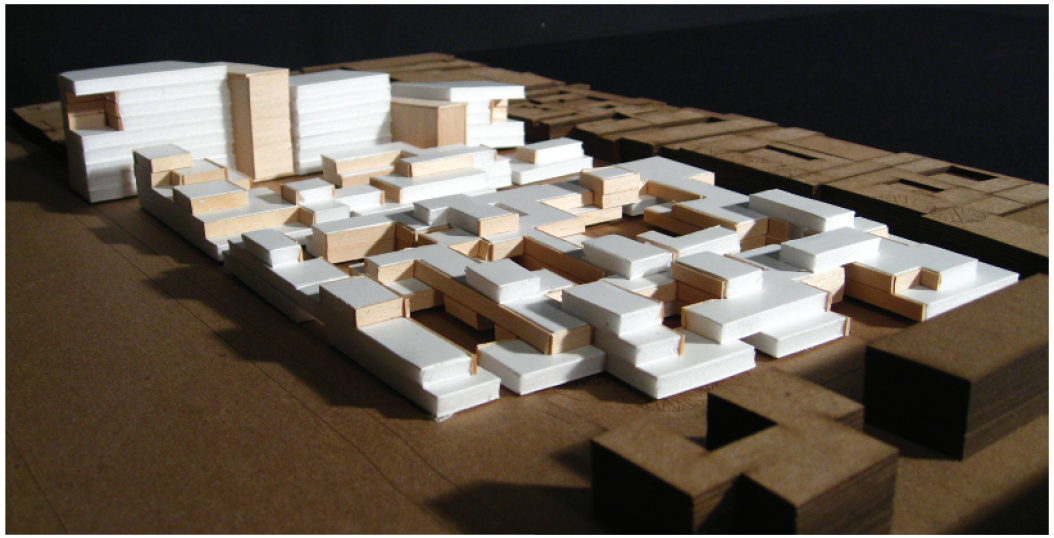


wood clad courtyards

texture comparison



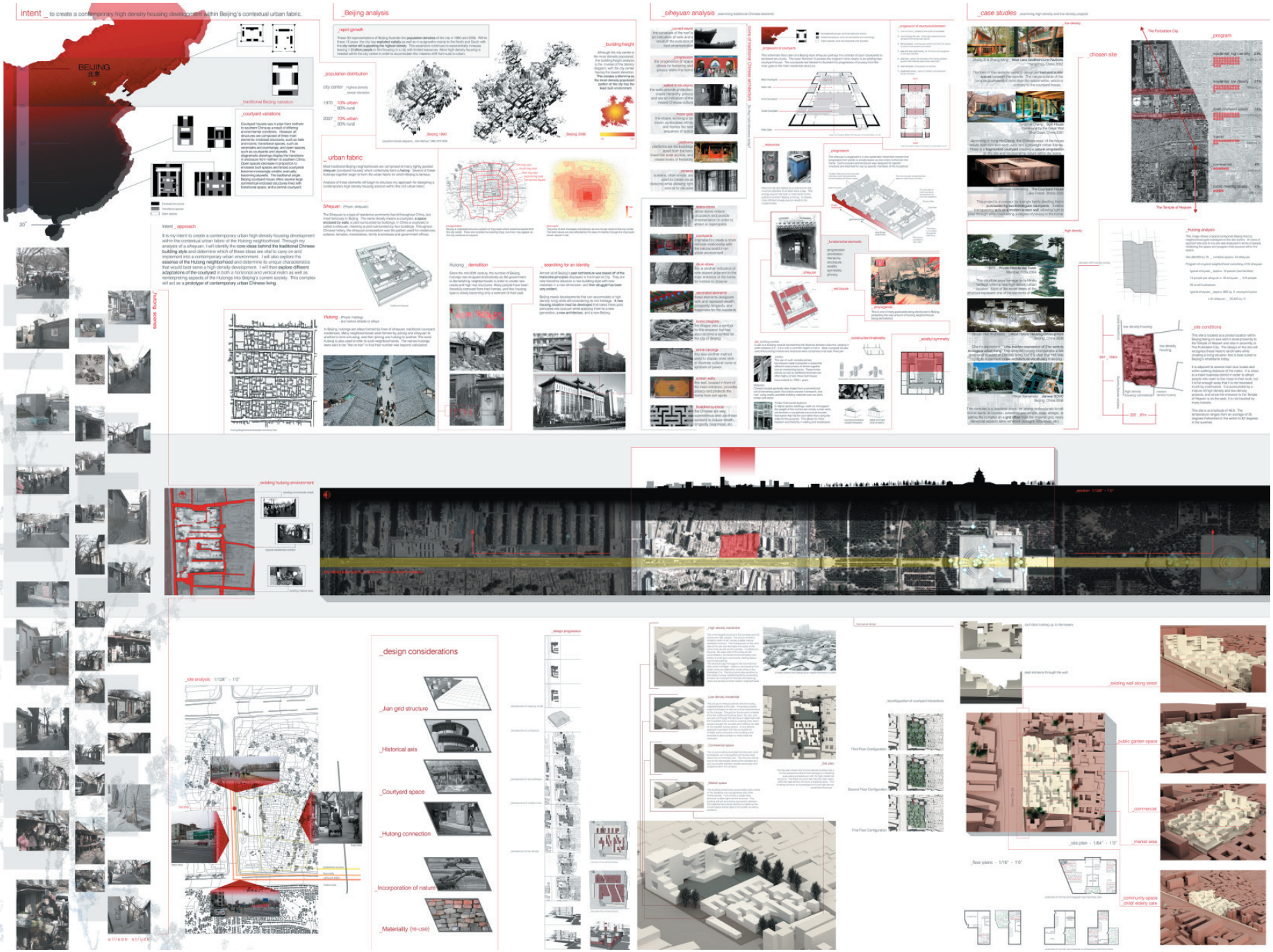
southwest view



south view

A ying/yang relationship begins to deveop between the solids and voids; the structure and courtyards; and the materials chosen (wood and boardform concrete).

conceptual design _ semester boards for review



From my intial research, I have determined a few key elements and a methodology with which to begin my design. The complex at this point in time is divided into the high rise portion and the low rise portion, which has been developed futher at this point. The low rise portion is taking on a strong connection to the adjacent hutong neighborhood. The high rise structure has established two corridors along axis with the Forbidden City in order to pay homage to the architecture of the past.

Using the jian as the underlying grid structure, I have begun to lay out the basic parameters of the development. There are a few commercial and social areas which will be a point of emphasis in the coming semester.

At this point in the semester, I was priviledged enough with the help of Scott Killinger to accompany Wayne Drummond and Mark Hoistad to TianJin and Beijing in order to establish an educational exchange. This gave me another opportunity to revisit my site, which, in turn, changed a few of my views. I was able to explore the site more fully and gain a lot more documentation.

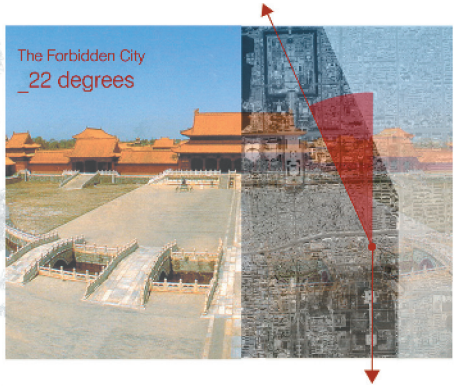
_established languages

orthagonal

_associated with the man made (wood, metal elements)
_used throughout for controlled environments

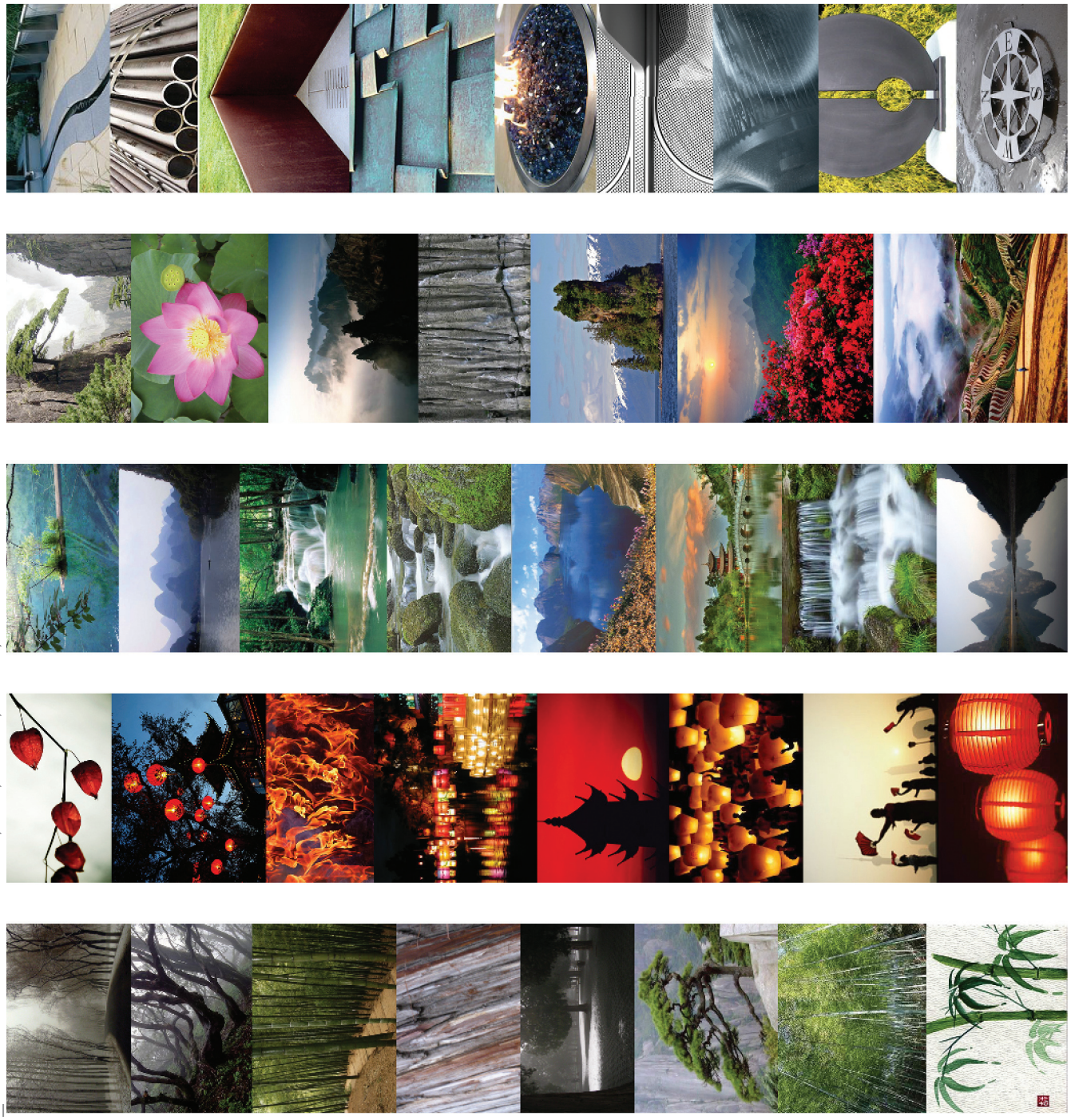
curved

_associated with the natural (ie. earth, fire and water elements)
_used in the courtyards or places associated with nature



angular

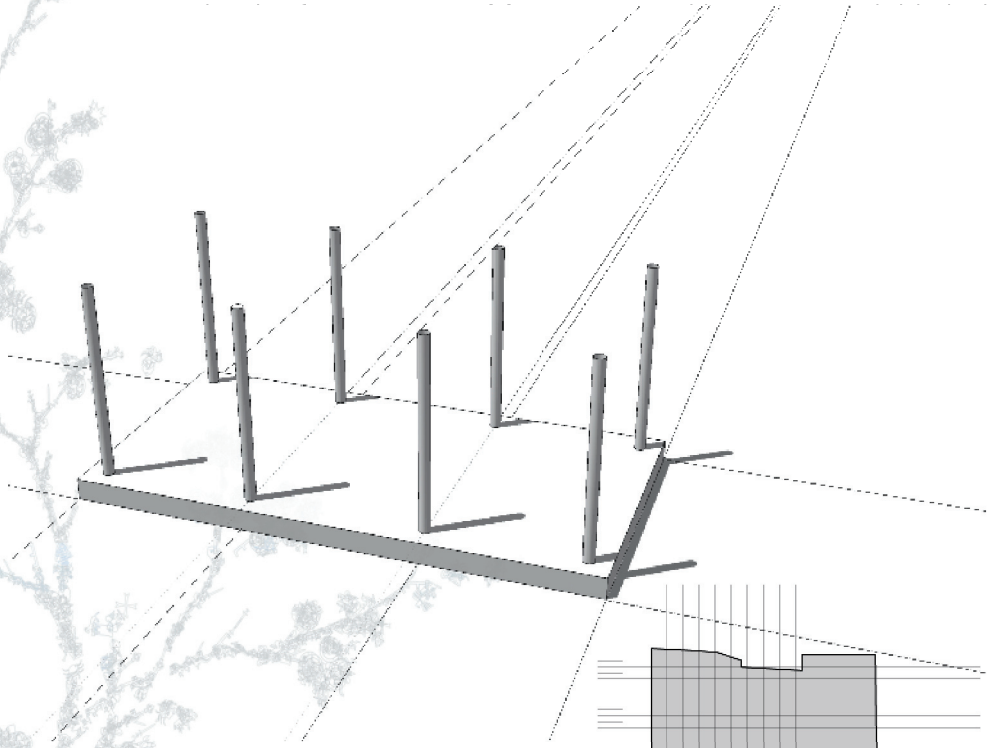
_associated with the ethereal (connection to The Forbidden City)
_used to create contrast and make inhabitants aware of connection

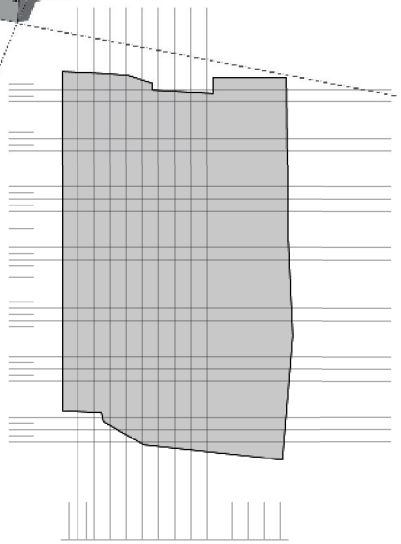


the five elements: wood, fire, water, earth, metal

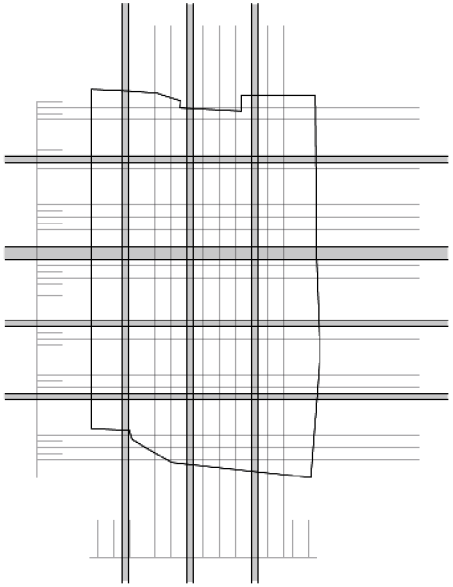
_jian building module progression

A jian is a building module representing the distance between columns, ranging in width from 3.3-3.6 meters with a common
lding module, and structures were comprised of at least three jian.
to organize the proposed site plan.

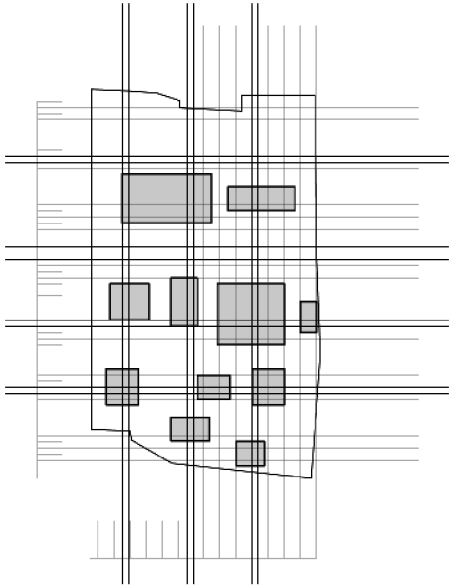




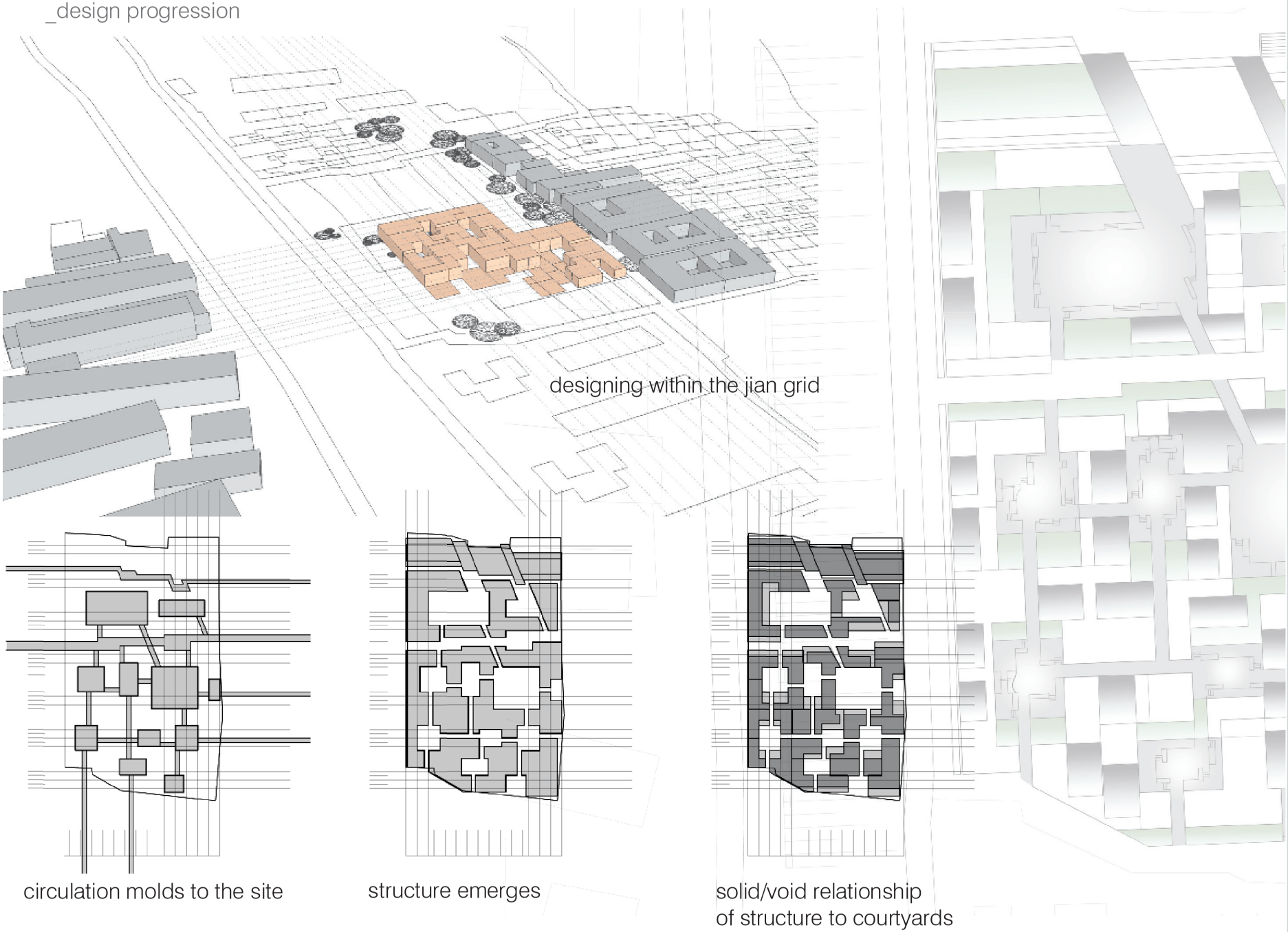
jian structure overlay on site



circulation placement

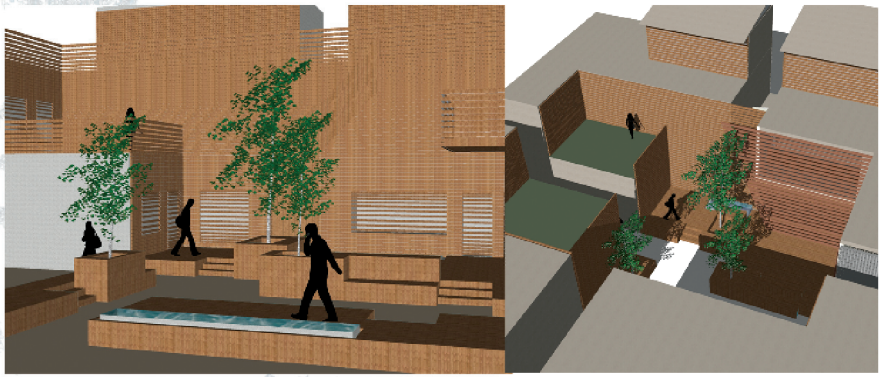


courtyards are placed at
intersections


designing within the jian grid
circulation molds to the site
structure emerges
solid/void relationship
of structure to courtyards

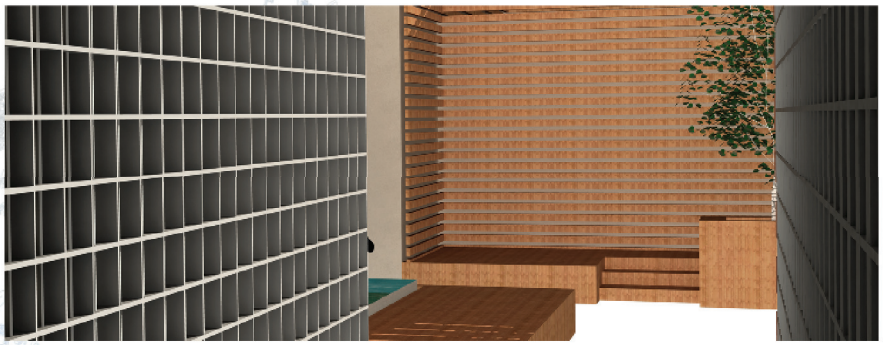
Courtyard Interior

The courtyard spaces will be clad in wood with wooden louvers over windows in order to maintain privacy within the homes. Each courtyard has its own personal characteristics and layout. There is plenty of seating as well as vegetation and some water elements which collect rainwater. These spaces are very warm and open. The residences are situated around them to maximize sunlight.



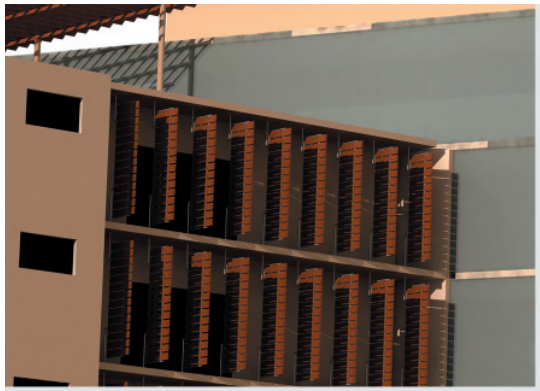
Residences

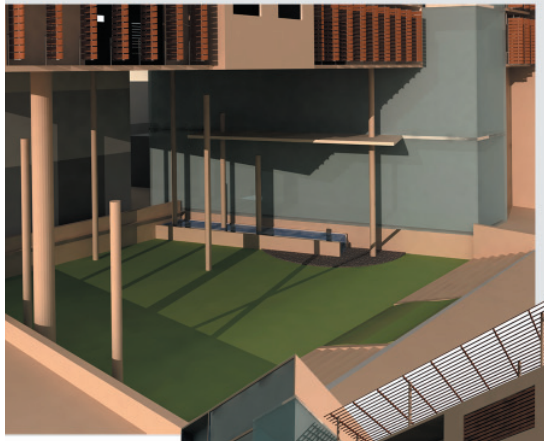
The main structural walls of the complex are comprised of board form concrete. This material creates a contrast with the wood clad courtyards and also brings a sense of scale to the facades.

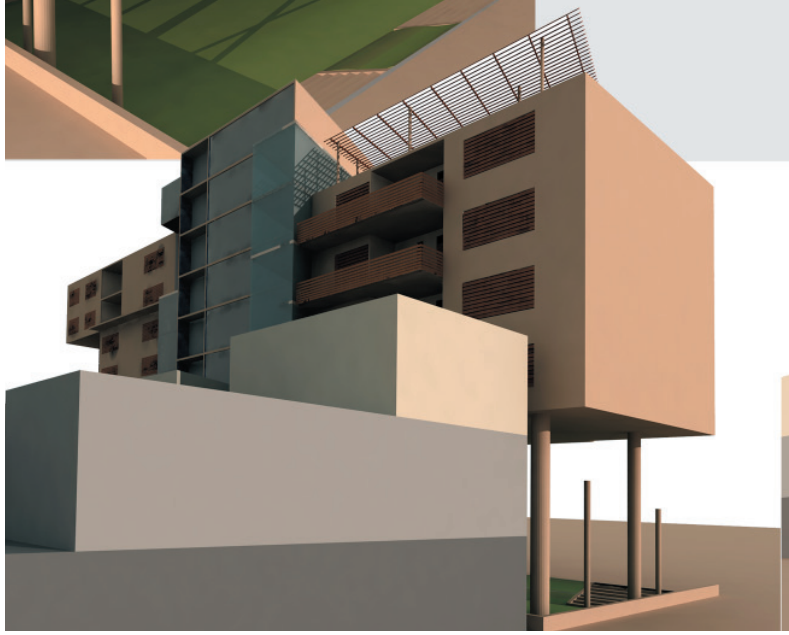


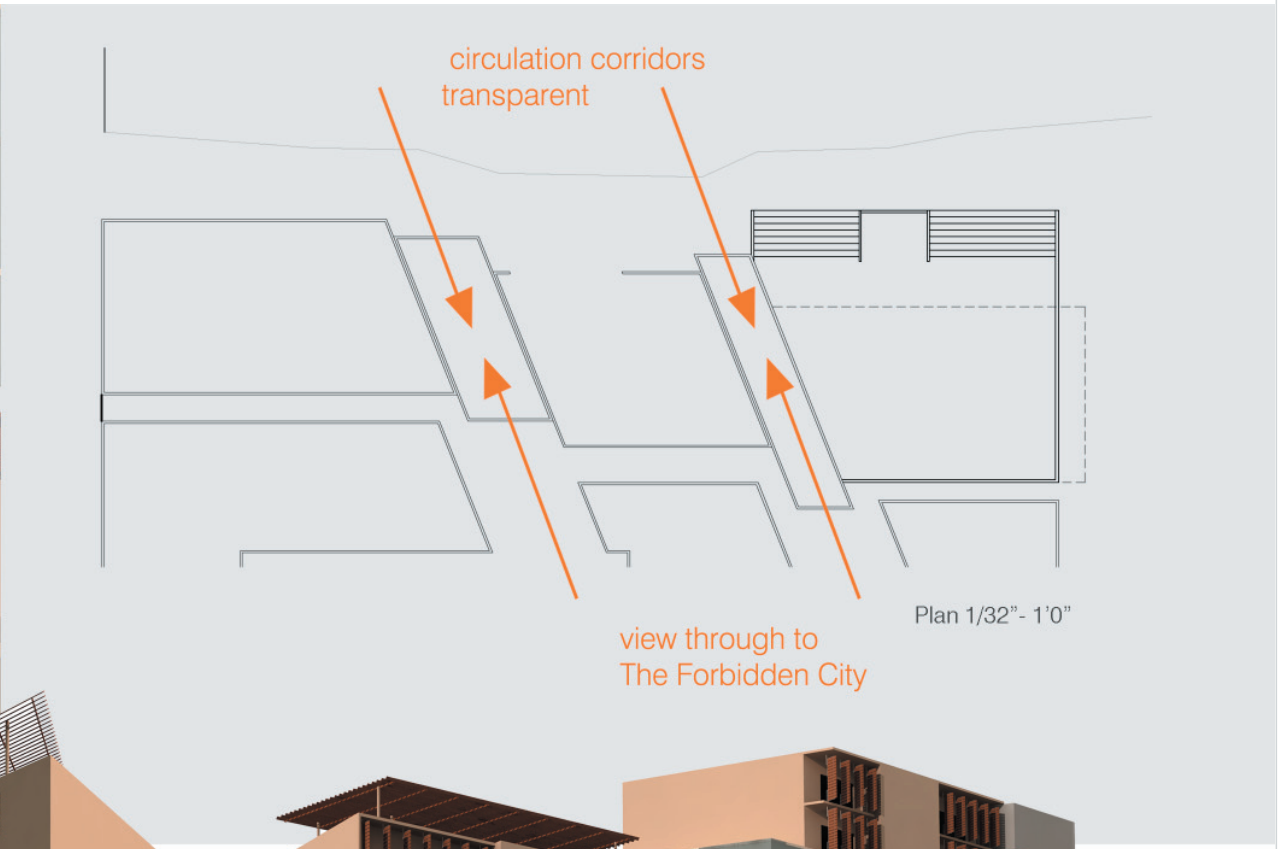
Interior Pathways

The paths that lead from one courtyard to another are lined with screening walls (pictured bottom left). This is a reuse of tiles in order to control views into the home while allowing light to enter. These walls add another element of scale while also condensing the pathway from one

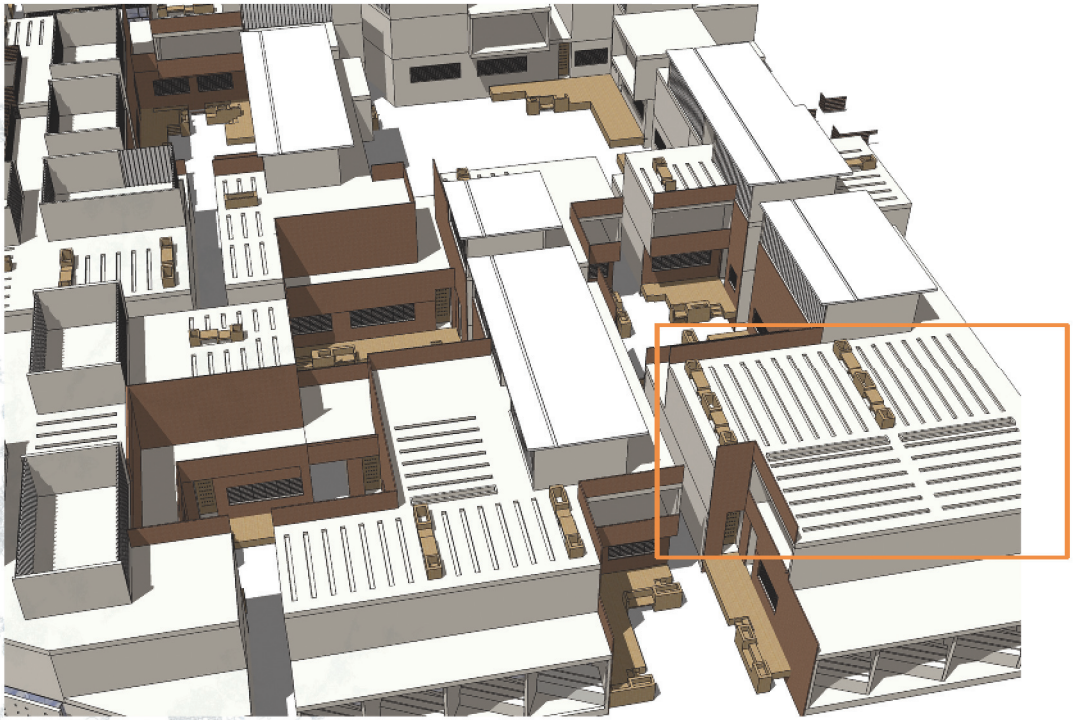







circulation corridors
transparent
Plan 1/32"- 1'0"
view through to
The Forbidden City

_roofscape



Roofscape

This space is a combination of a green roof and a controlled garden interspersed with sun rooms/ tea rooms which allow plenty of light into the level below. The garden spaces allow the residents to grow plants for food, screening, or fun. Benches are placed among the rows for relaxation, and some of the benches contain light wells accessing the units below. This creates a desireable landscape on one's roof adding another layer of privacy to the complex.

The space configurations of the upper levels was based partly on the jian and partly based upon allowing the maximum sunlight into the courtyard spaces as well as assuring proper sunlight access to the residences.

At this point, the project really began developing relationships within the site. The plan changed according to the diagrams shown earlier as a result of revisiting the site. Most of the interactions that occurred between people occurred at the intersection of two alleys. So, courtyards were placed at these intersections to make formal spaces for social interaction with neighbors. The materials of wood and the inverse of board form concrete began to further develop, and the relationship between the courtyards and the site as a whole began to resemble one another.

The high rise was developed much later than the low rise structure; however, the residences began to take shape and form a similar progression to that of the low rise structures. The North elevation contains small exterior spaces with moveable louvers to control sunlight and ventilation, and the South elevation began to form relationships with shared courtyards. There is still a strong disconnect between the low rise portion and the high rise portion of the project. However, the roofscapes are beginning to take shape and become more desirable spaces.

tradition _the relevence of the past informs the future

scale shift _from courtyard to high rise, scale delineates individuality as well as a sense of place

materiality _the tactile characteristics of ones surroundings influences their perception of space

environmental impact _the traditional and sustainable relationship between the building and its context

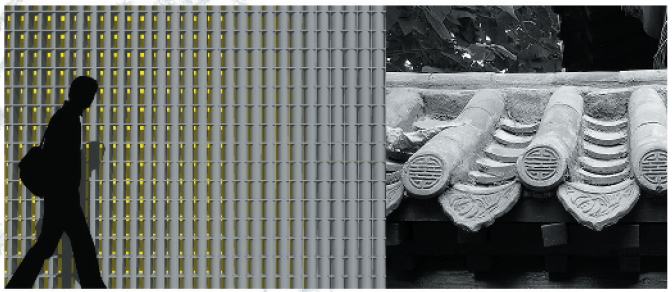
_materials pallete

wood

_used as cladding and sunshading (louvers) for the interior of courtyards as well as railings

concrete

_board form concrete will be used as the main structure for the lower density housing



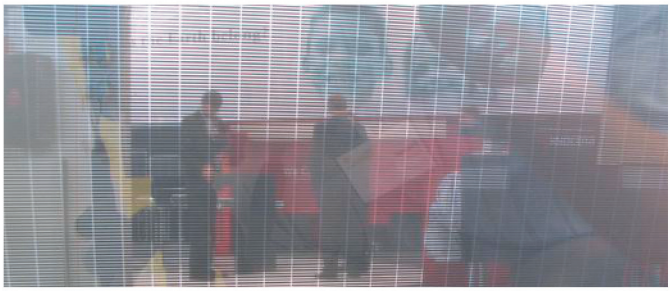
tiles

_the reuse of tiles from past courtyard houses will be used to create screen walls with varying degrees of transparency

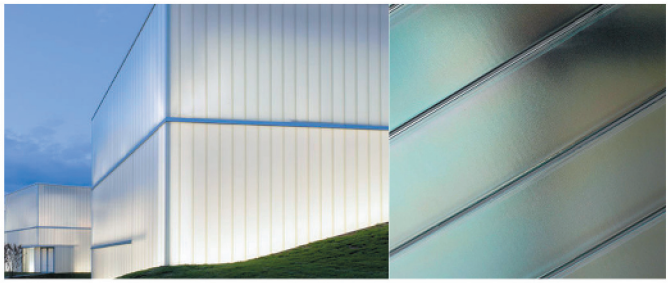
vegetation

_a combination of occupiable and unoccupiable green roofs will be implemented with the option for small contained gardens

water _a rainwater collection system will be implemented to provide water to the vegetation within the site as well as providing several reflection pools

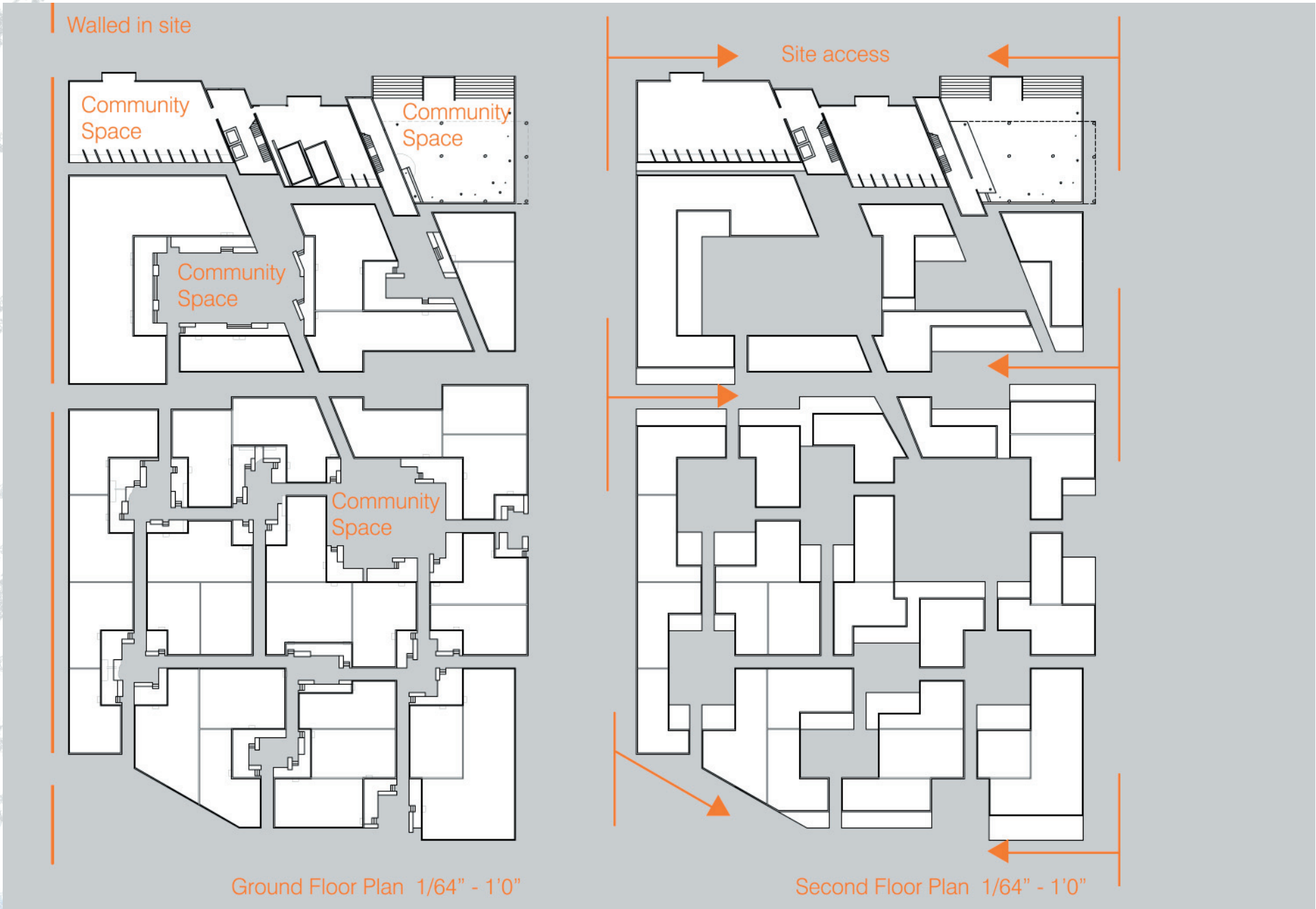


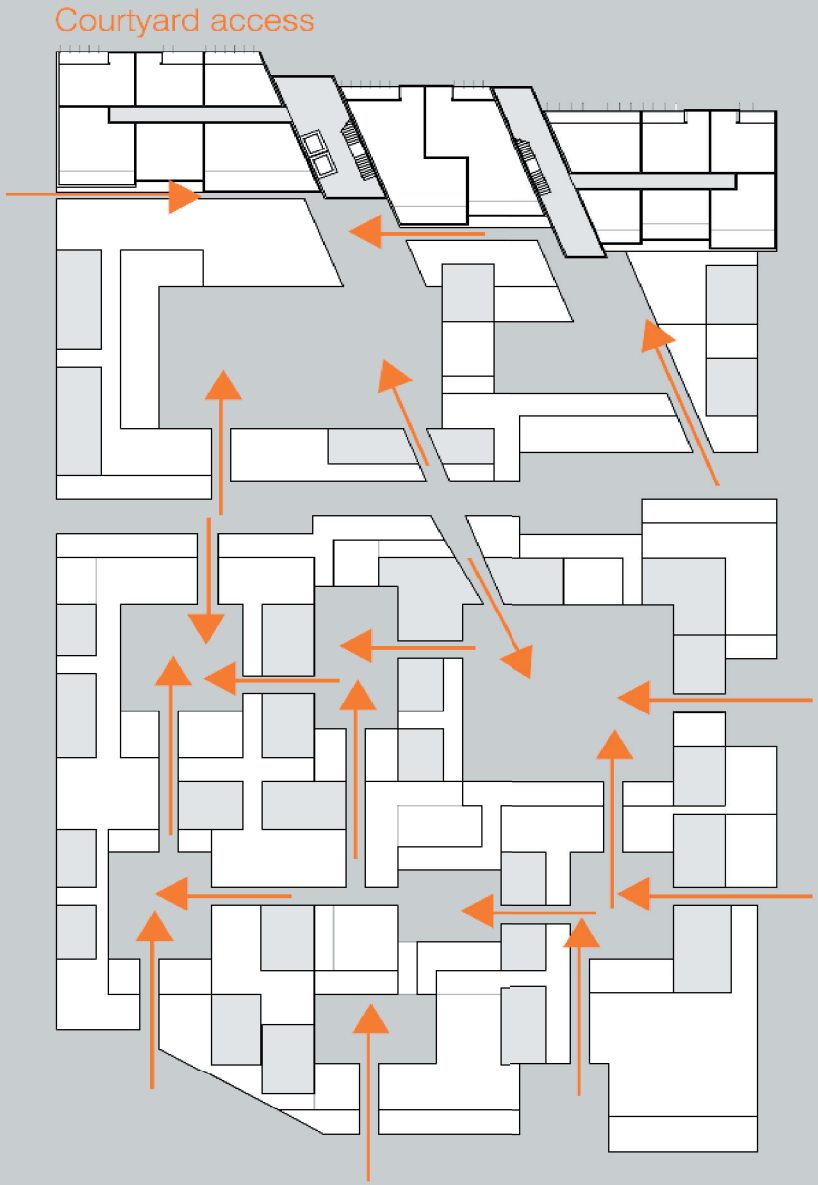
photovoltaics _transparent photovoltaics are used on the south facade of the two circulation corridors as well as implemented into the roofscapes



channel glass _this transparent material will be used in the circulation corridors as well as the east and west facades of the third floor sun rooms

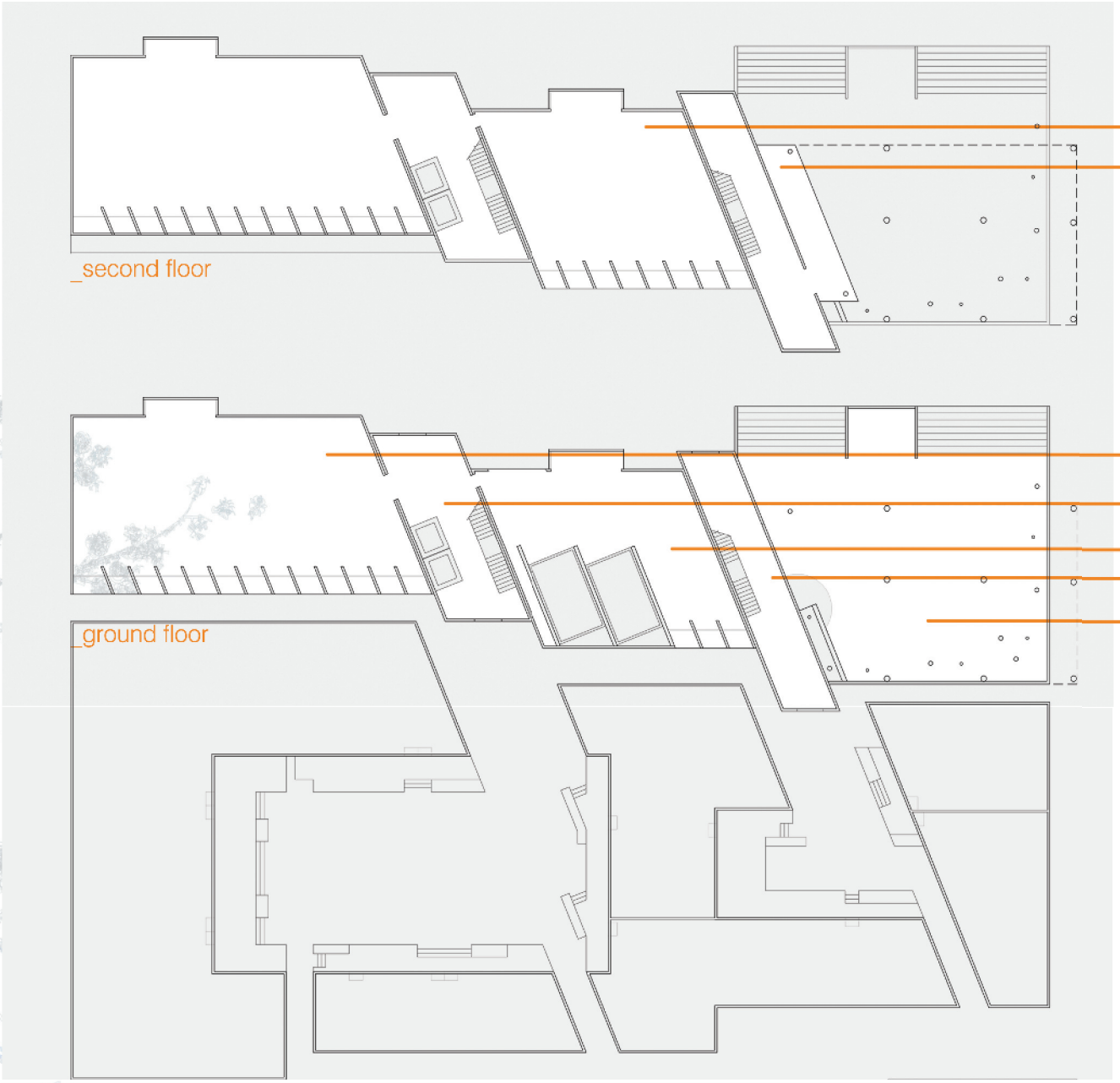
_site plans

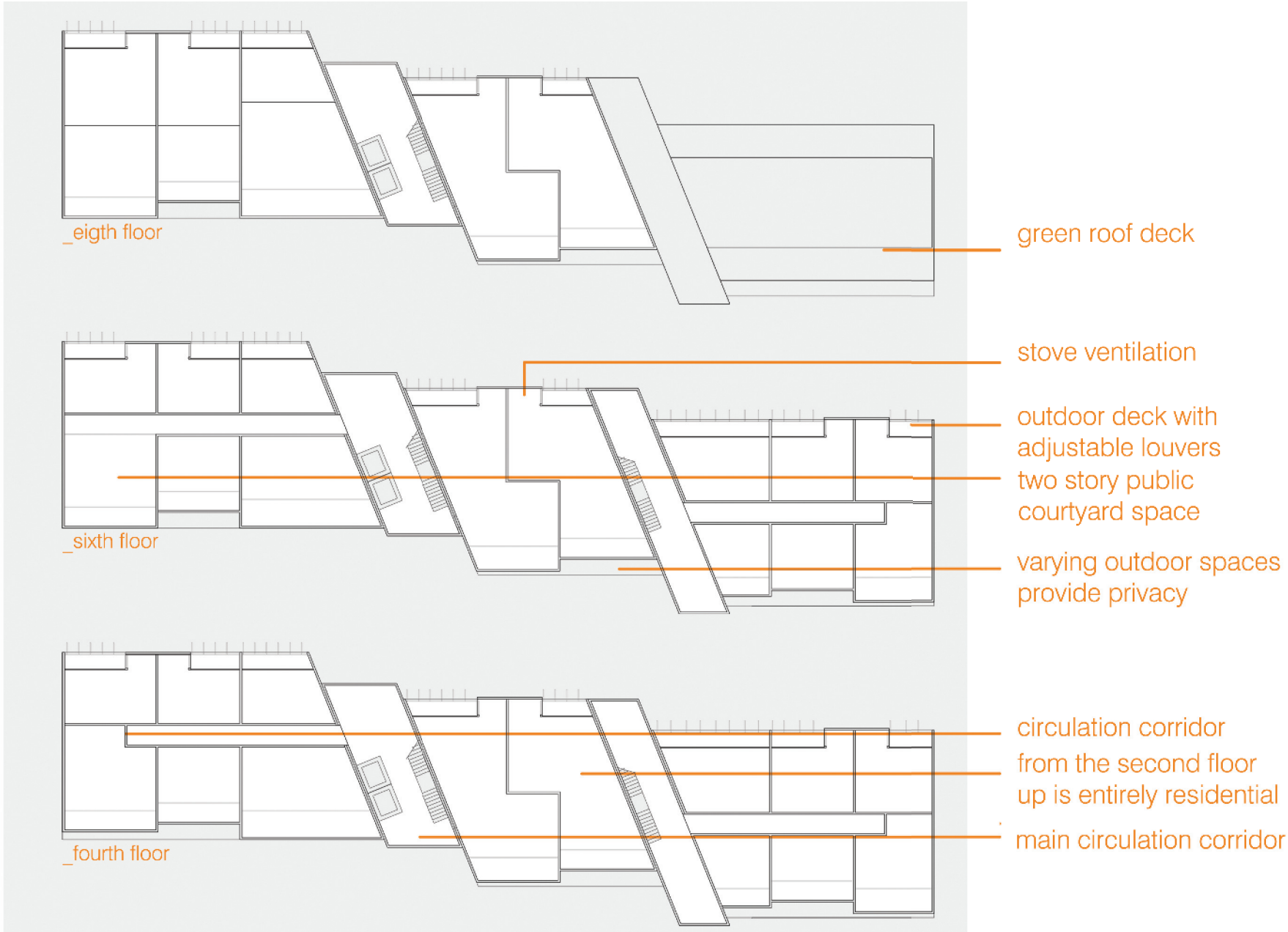

Walled in site
Community Space
Community Space
Community Space
Community Space
Ground Floor Plan 1/64" - 1'0"
Site access
Second Floor Plan 1/64" - 1'0"



While visiting Beijing, it became obvious that the intersections between alleys became a place for social interaction and even sporting events. This led to the decision to create courtyards at these intersections. These spaces now become usable social spaces with varying degrees of privacy. Larger courtyards exist for neighborhood gatherings, while smaller intimate courtyards are to be shared between close neighbors or used as more contemplatative spaces.

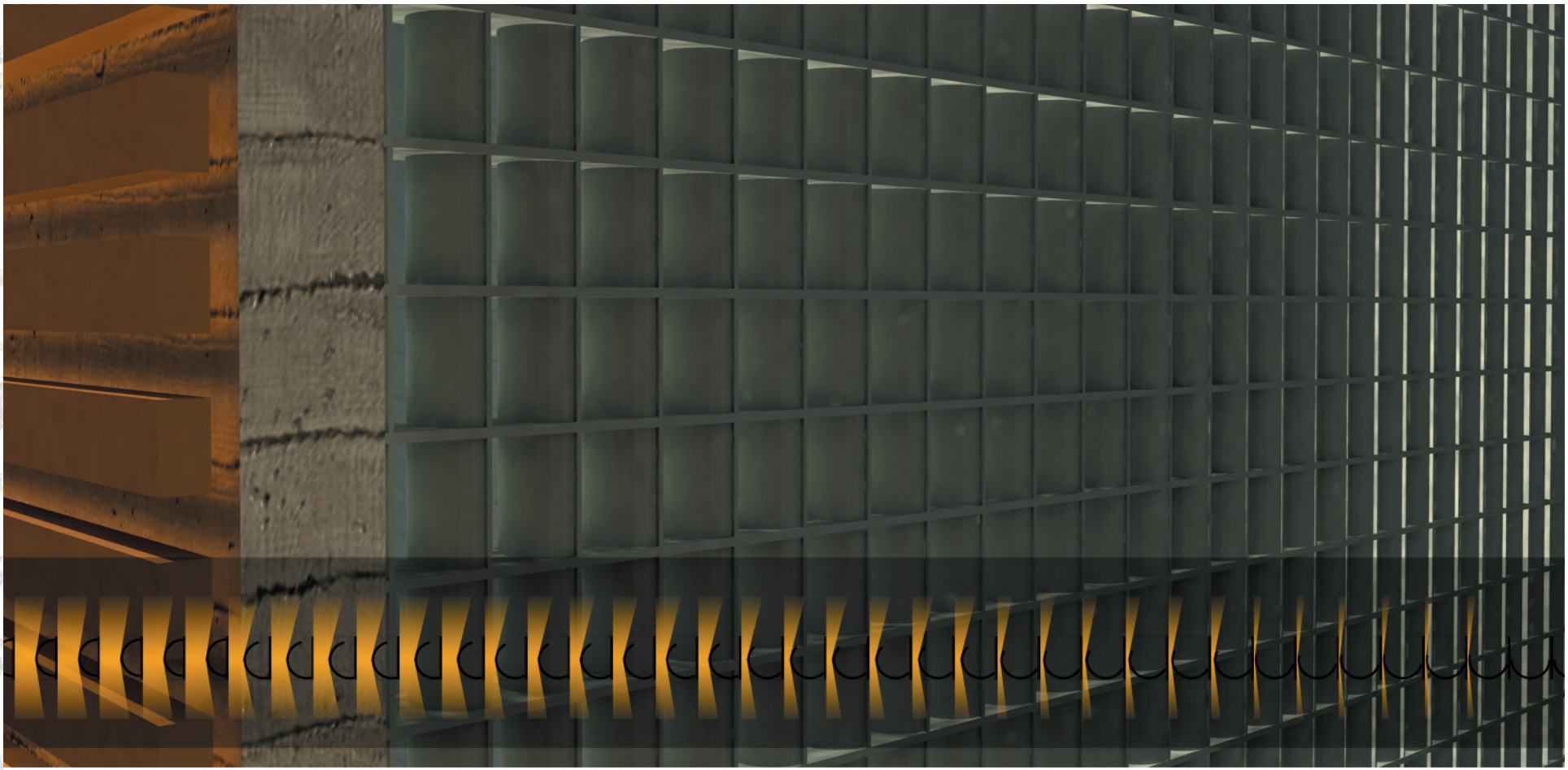
_high rise plans 1/32”- 1’0”




_eigth floor
green roof deck
stove ventilation
outdoor deck with
adjustable louvers
two story public
courtyard space
_sixth floor
varying outdoor spaces
provide privacy
circulation corridor
from the second floor
up is entirely residential
main circulation corridor
_fourth floor

_material re-use

The two main materials in the development are wood and baord form concrete; however, materials from the existing hutong are being re-used in the future design. The image below is a close up rendering of a screening device comprised of used roof tiles. The drawing displays the tiles in a concrete grid at various rotations in order to allow different amounts of light to pass through. This allows for a lot of light access in more public spaces, while private spaces can be more enclosed. These screening walls occur along the narrow alleys within the project. Therefore, you are condensed into a smaller path lined with this wall system until you emerge into a courtyard. Bricks from the existing hutongs are also being used as paving for smaller courtyards and paths through the complex.



_projected density

The proposed site is able to house approximately the same amount of people as previously inhabited the site; however, there are twice as many homes. The living quality has improved drastically and there is opportunity for commerce as well as an abundance of public and private spaces. A market area is now available for the residents as well as parking, bike storage, and other needed public ammenities. The living conditions previously were very poor and cramped. The proposed project allows inhabitants to enjoy their property and still have room to let the kids play in the courtyard or enjoy a private cup of tea on the roof. Although the desired density may not have been reached, the quality of the complex has not been compromised.

_existing hutong density

Site (80,000 sq. ft.) _ contains approx. 34 siheyuan

Program of a typical hutong consisting of 34 siheyuan

typical siheyuan _ approx. 10 people (two families)

10 people per siheyuan x 34 siheyuan _ 340 people

20 small businesses

typical siheyuan _ approx. 600 sq. ft. courtyard space

x 34 siheyuan _ 20,400 sq. ft.

_proposed site

Site (80,000 sq. ft.) _ contains approx. 79 homes

The site contains 36 lower units and 43 upper units

typical home _ 3.89 people

Homes vary to accomodate families of various sizes

3.89 people per home x 79 siheyuan _ 308 people

30+ small businesses

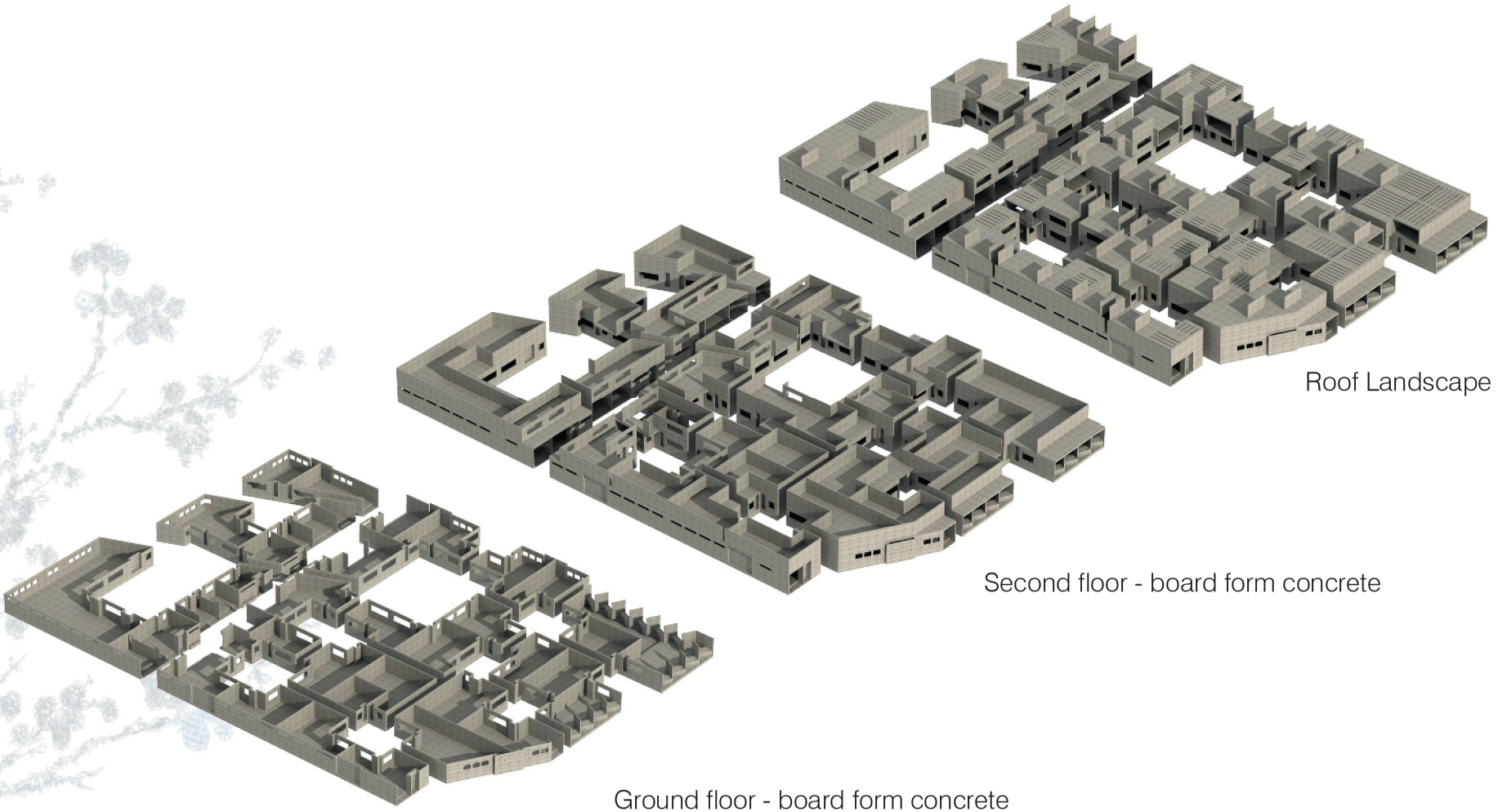
Market space

Elderly care/ child care complex

Community space

Large public couryard space

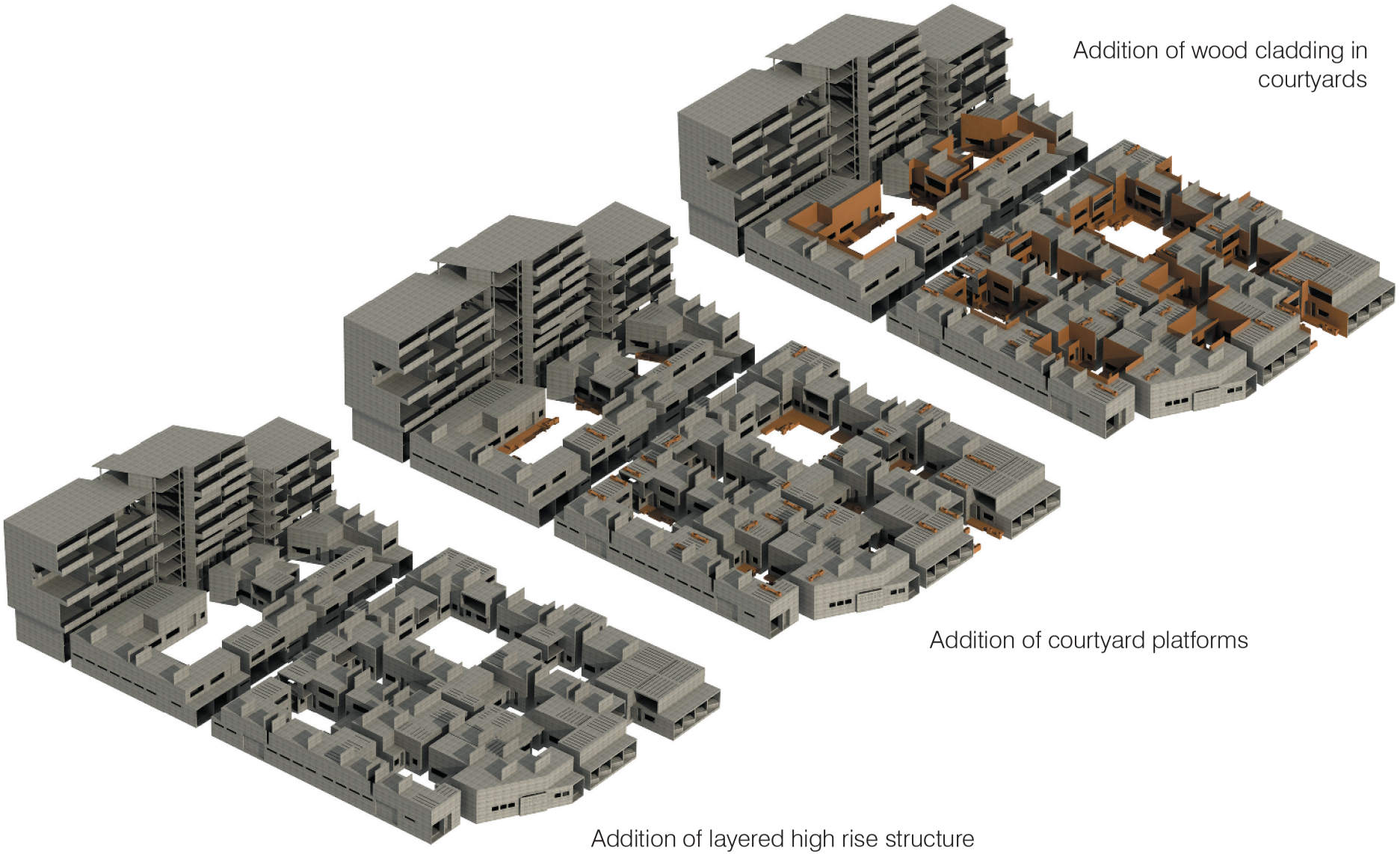
_progression of structure



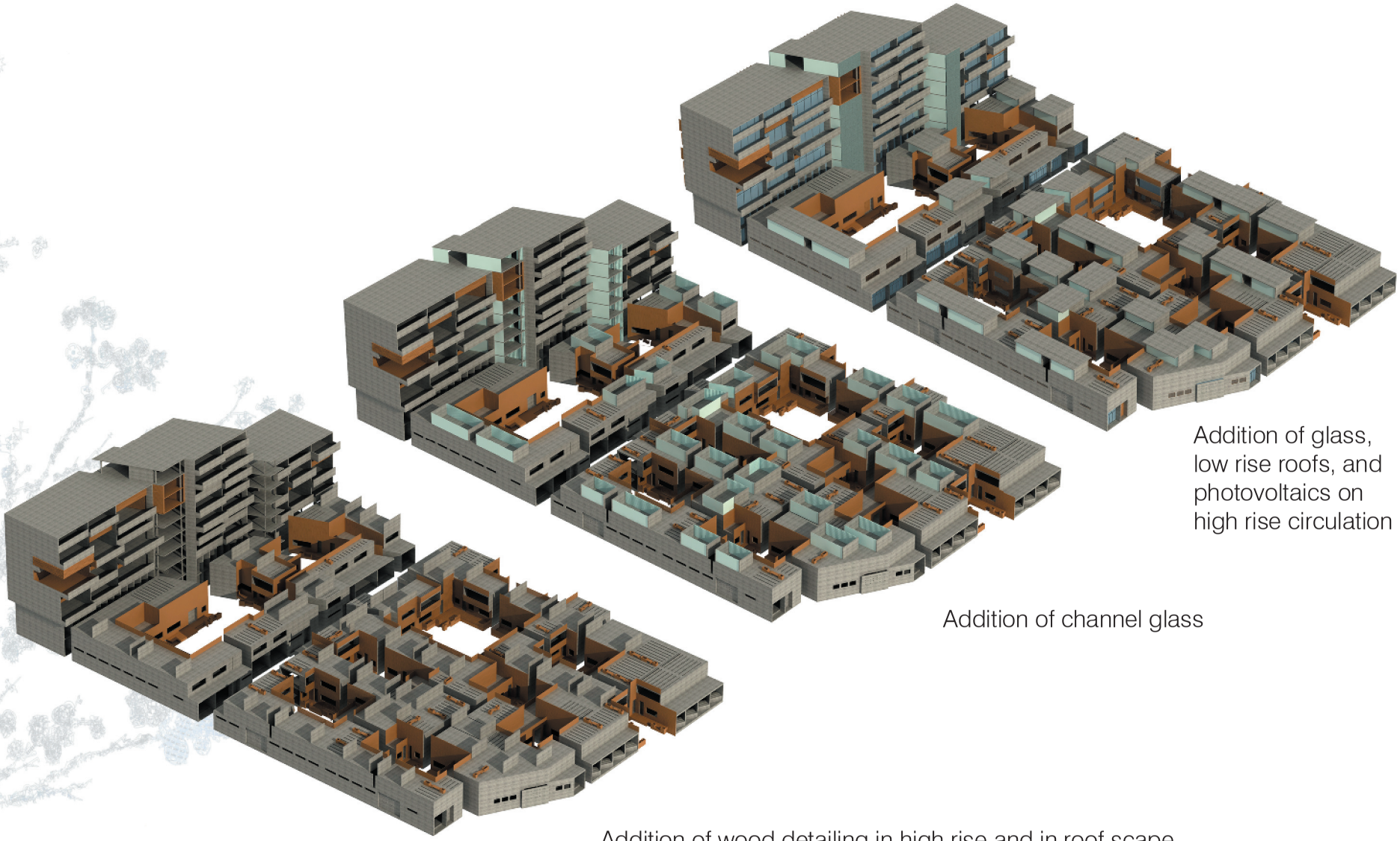
Roof Landscape

Second floor - board form concrete

Ground floor - board form concrete


Addition of wood cladding in courtyards
Addition of courtyard platforms
Addition of layered high rise structure

_progression of structure

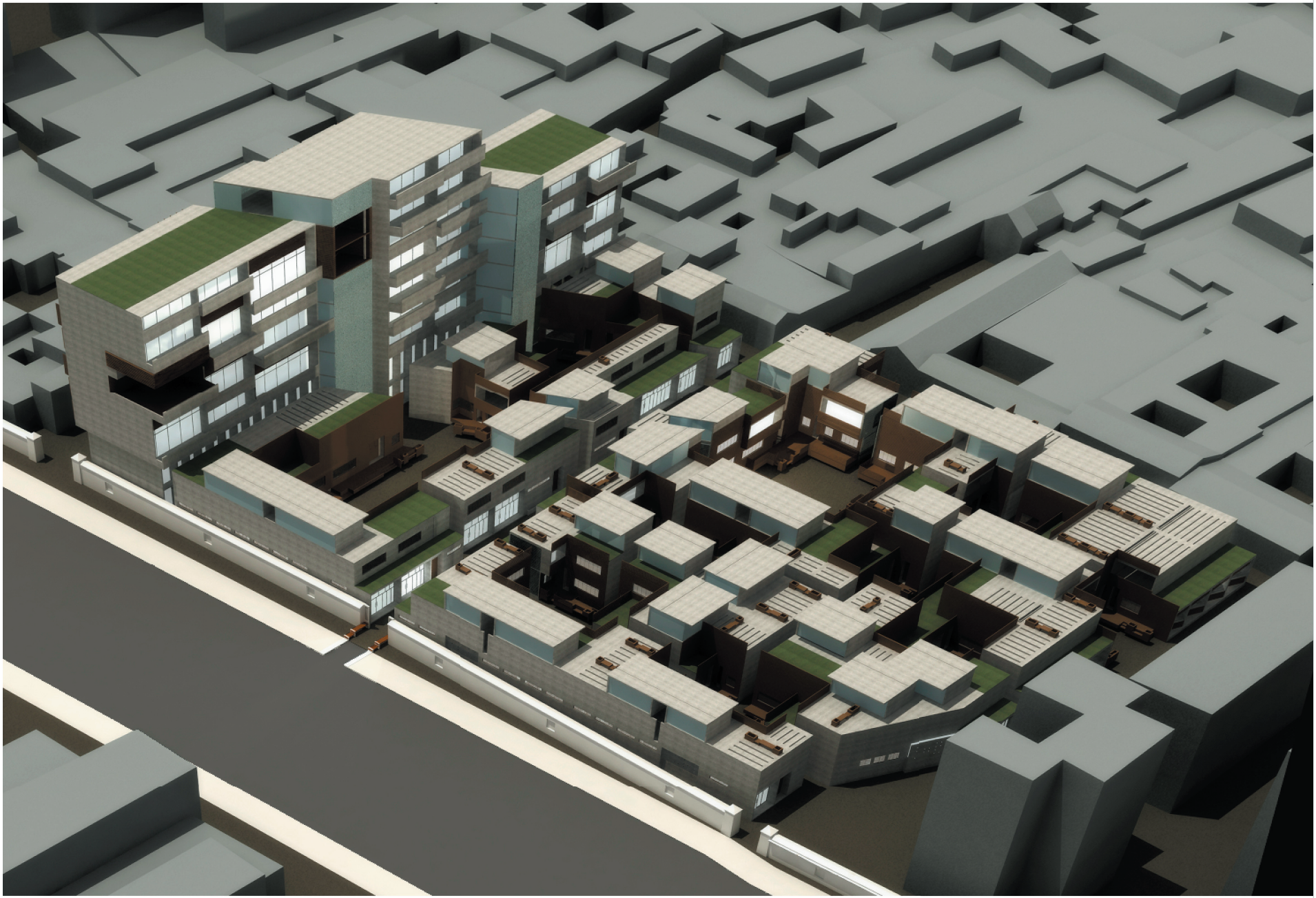


Addition of glass, low rise roofs, and photovoltaics on high rise circulation

Addition of channel glass

Addition of wood detailing in high rise and in roof scape

_southwest view



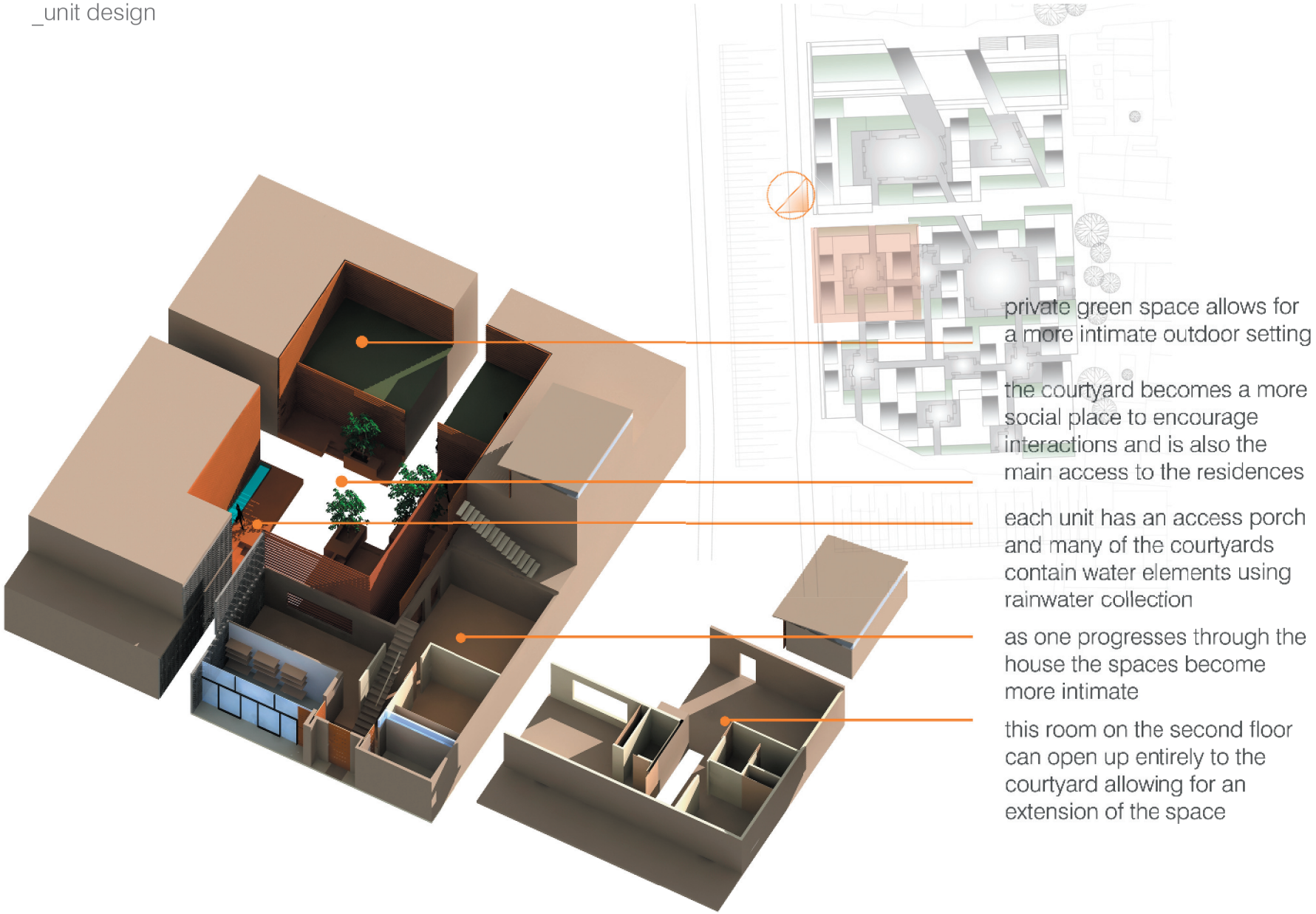
these sun rooms allow access to the roof as well as providing a more solitary space or tea room for the family- they also provide more natural lighting for the second floor

controlled gardens give residents a place to plant for food, fun, or privacy benches are also installed within the gardens for reflection

the second floor is set back to maintian a sense of scale on the ground level - this space will be green and usable for residents as well

the residential door is a sign of importance in China and they should be distinguished and prominent

this home resides along the commercial corridor so it has a commercial and residential entrance- the commercial portion is very exposed while the residential portion is relatively hidden from the main streetscape



private green space allows for a more intimate outdoor setting

the courtyard becomes a more social place to encourage interactions and is also the main access to the residences

each unit has an access porch and many of the courtyards contain water elements using rainwater collection

as one progresses through the house the spaces become more intimate

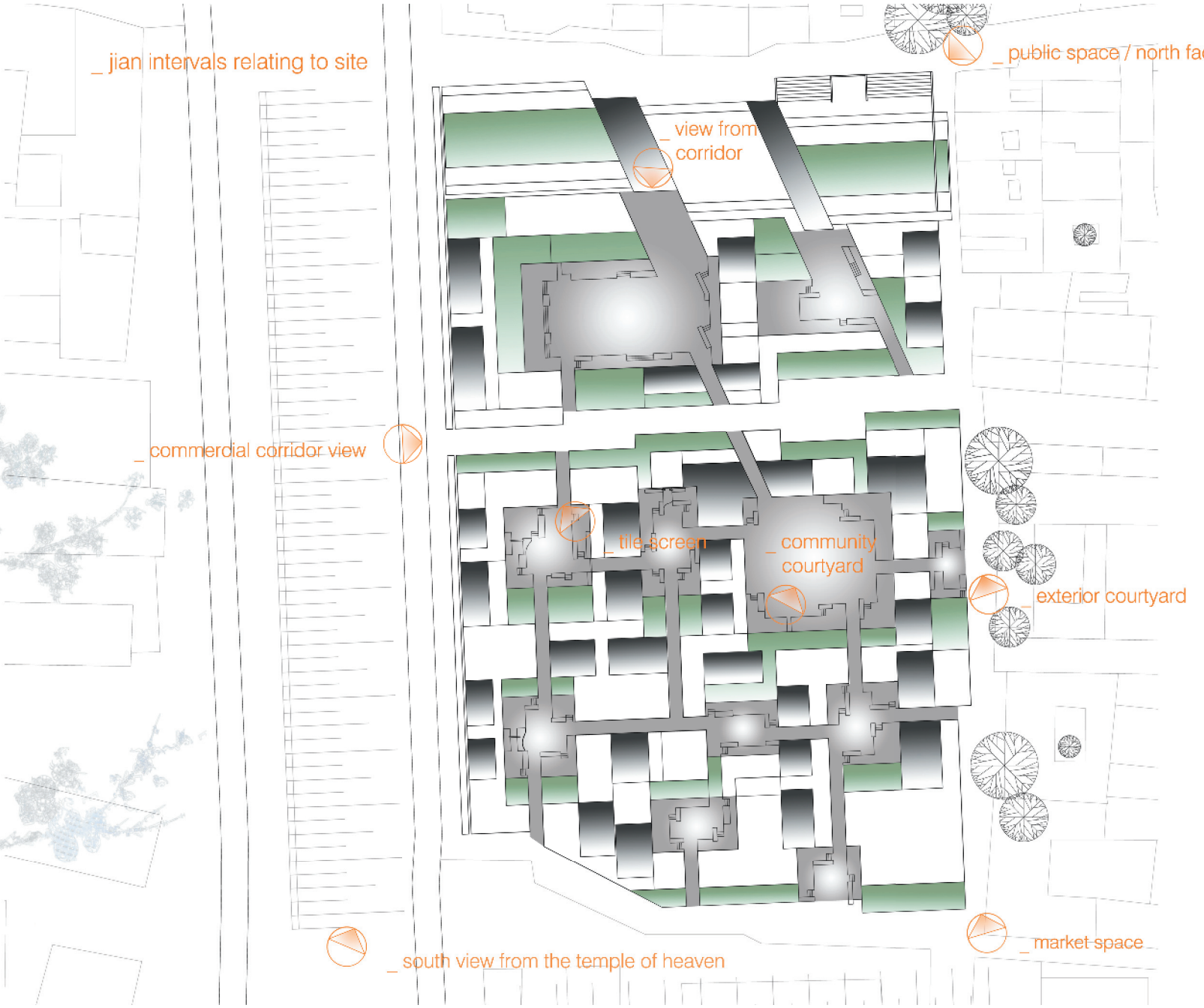
this room on the second floor can open up entirely to the courtyard allowing for an extension of the space

_site section 1/32" - 1'0"

_view from the Temple of Heaven

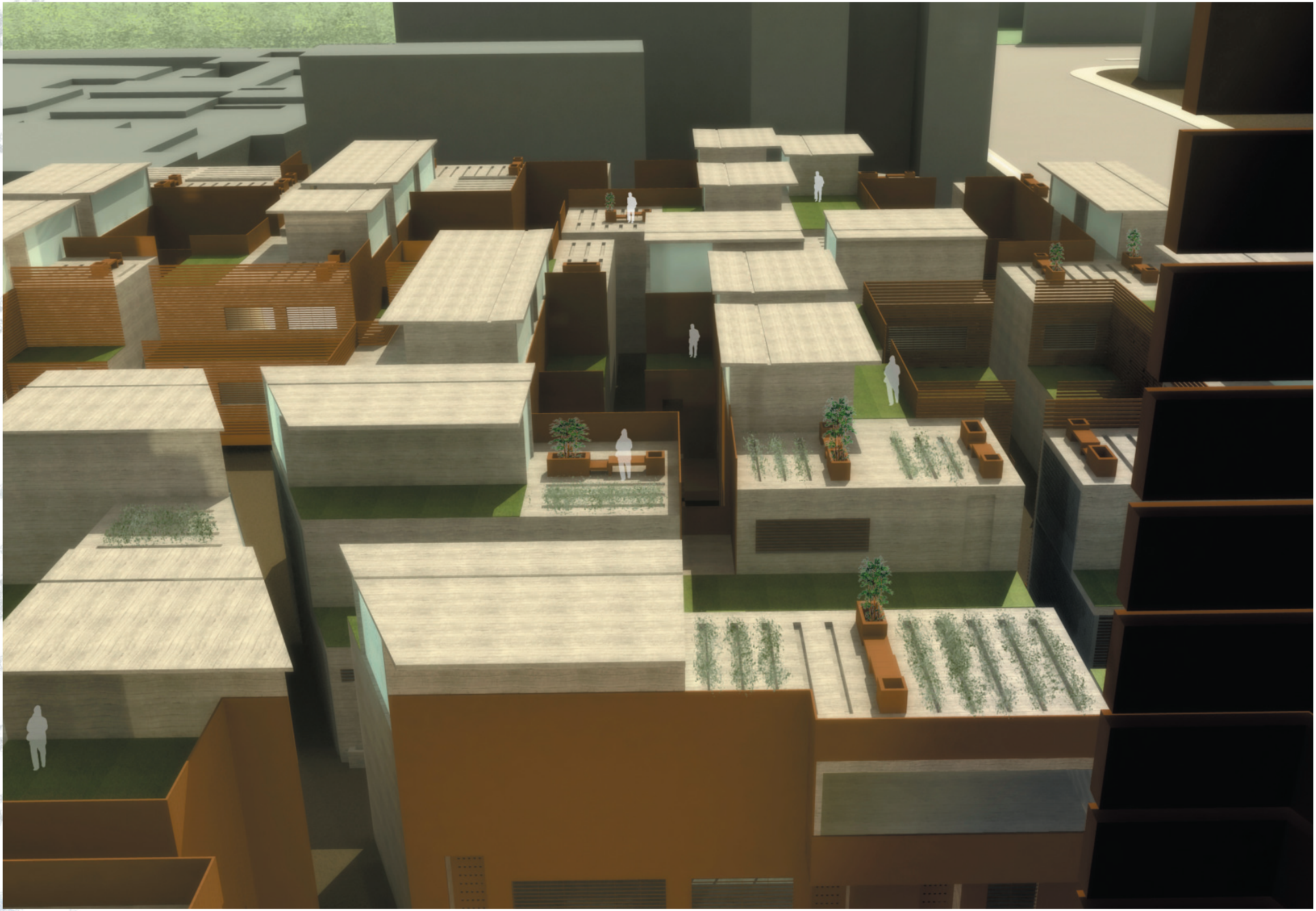
final design documentation _ plan

_site plan 1/64" - 1'0"



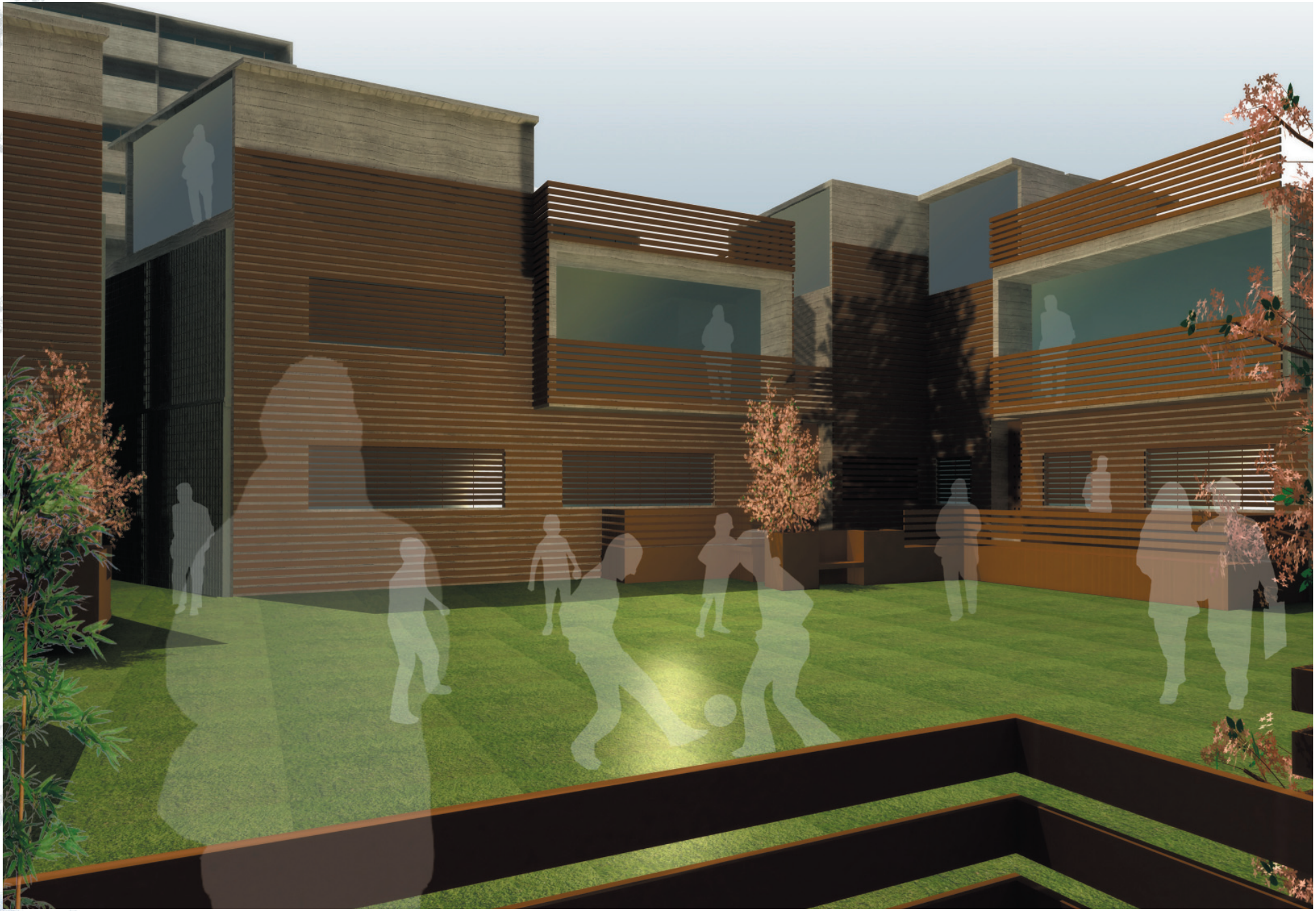
_commercial corridor

_view of roofscape from vertical circulation corridor



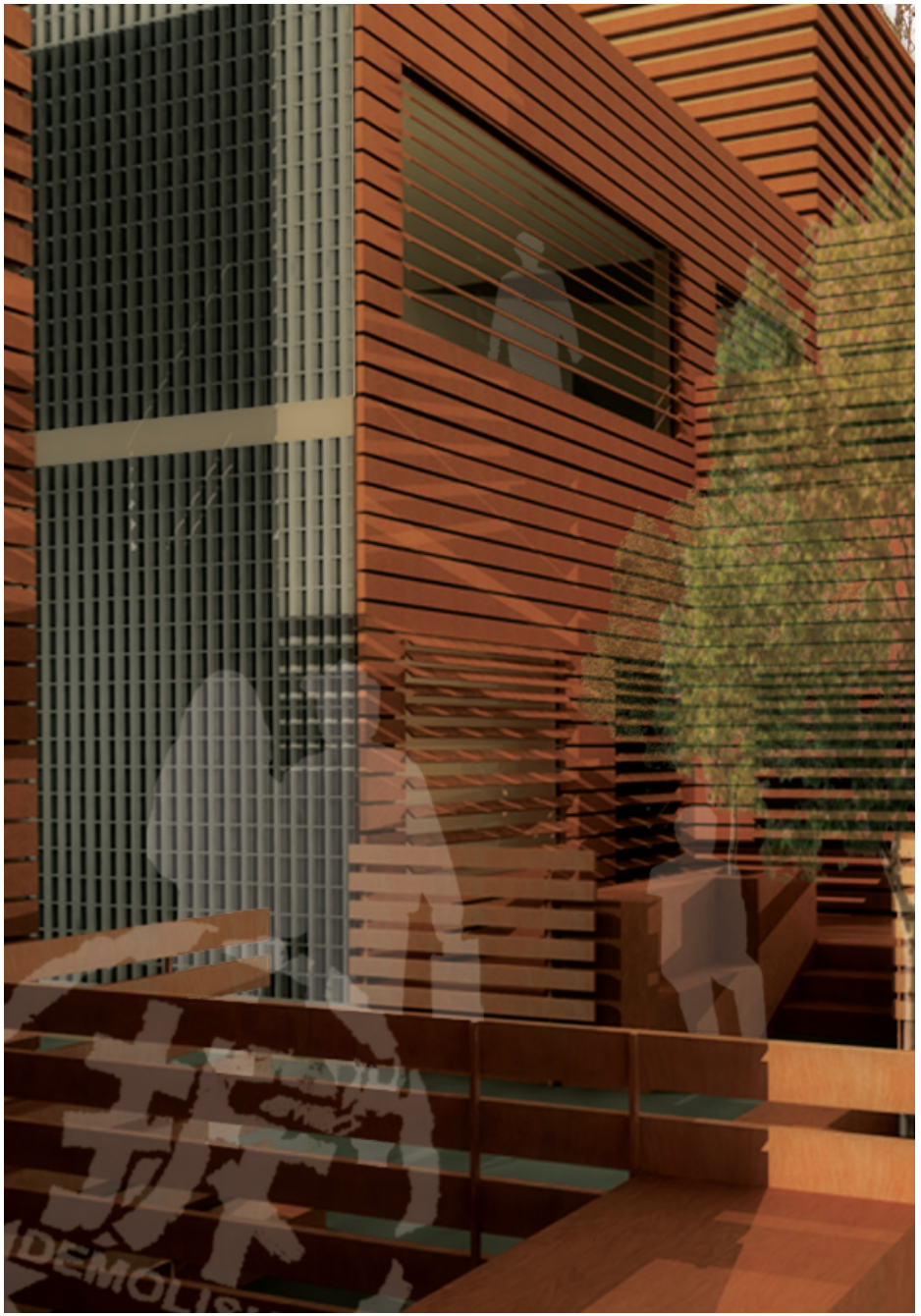
_public courtyard below high rise

_large community courtyard

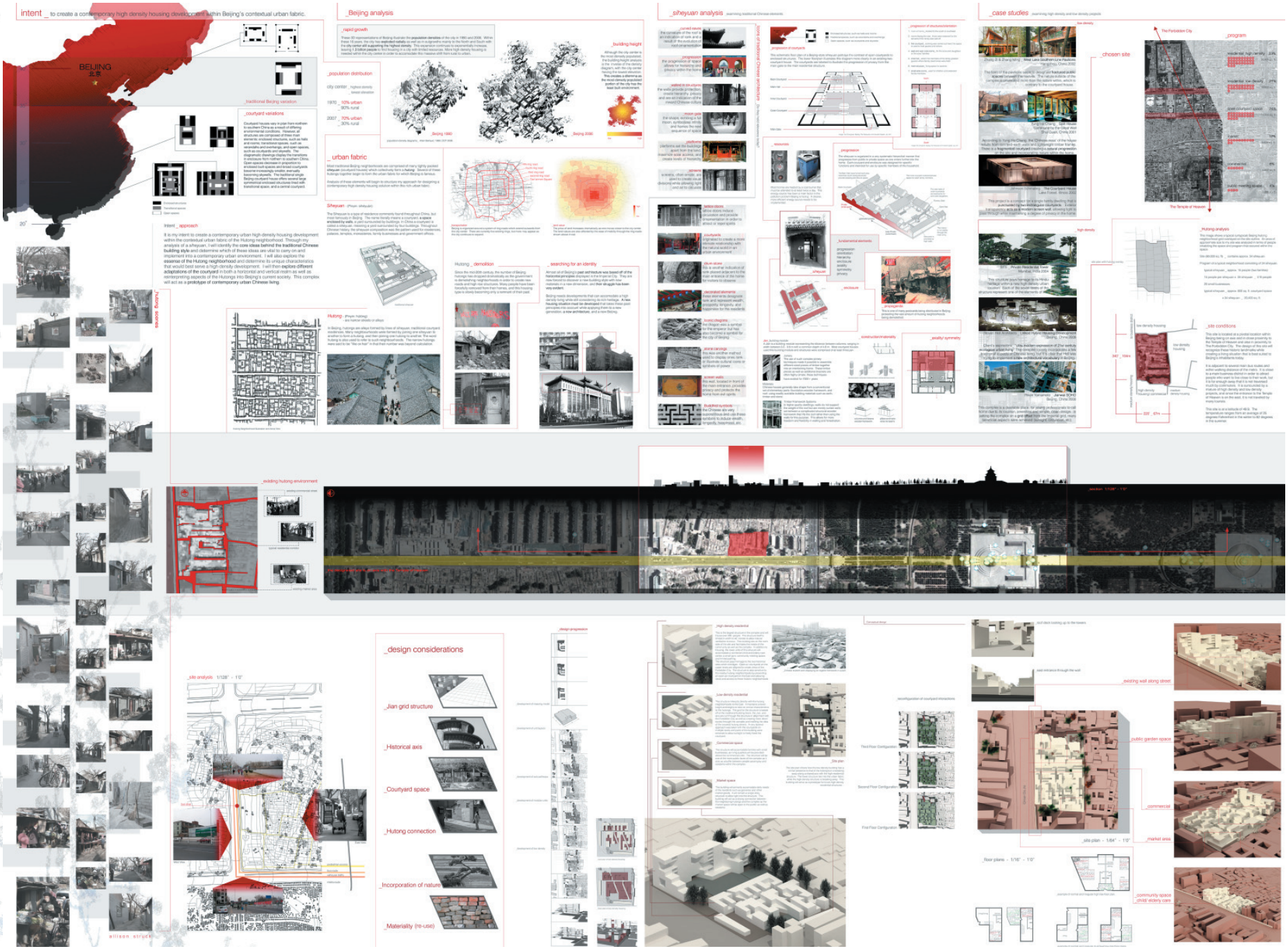


_small exterior courtyard

_exterior courtyard



final design documentation _ review boards

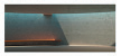


reinterpreting the hutong

_ main design considerations

tradition _the relevence of the past informs the future

scale shift _from courtyard to high rise, scale delineates individually as **well as a sense of place**



materiality _the tactile characteristics of ones surroundings influences **their perception of space**

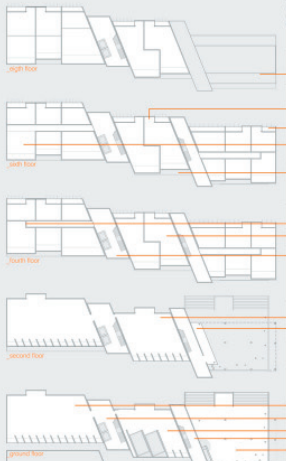
environmental impact _the traditional and sustainable relationship **between the building and its context**

_established languages

orthogonal _associated with the man made (wood, metal elements) _used throughout for controlled environments

curved _associated with the natural (ie. earth, fire and water elements) _used in the courtyards or places associated with nature

angular _associated with the infamous connection to The Forbidden City _used to create contrast and make the visitor aware of connection



green roof deck

stove ventilation

outdoor deck with adjustable louvers two story public courtyard space

varying outdoor spaces provide privacy

circulation corridor from the second floor up is entirely residential

main circulation corridor

commercial cafe overlooking court

commercial

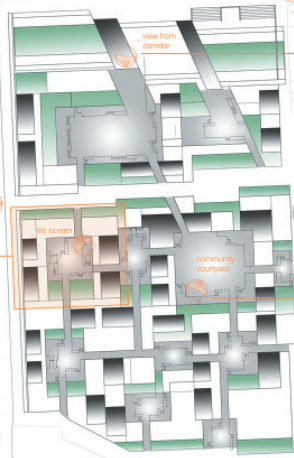
circulation corridor

bike storage- access to underground parking

circulation corridor

open public space

_site plan 1/16" - 1'0"



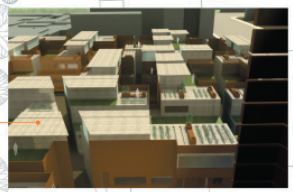
_jian intervals relating to site

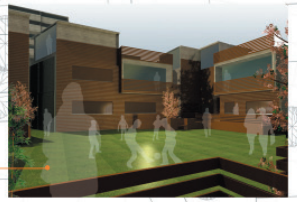
_commercial corridor view

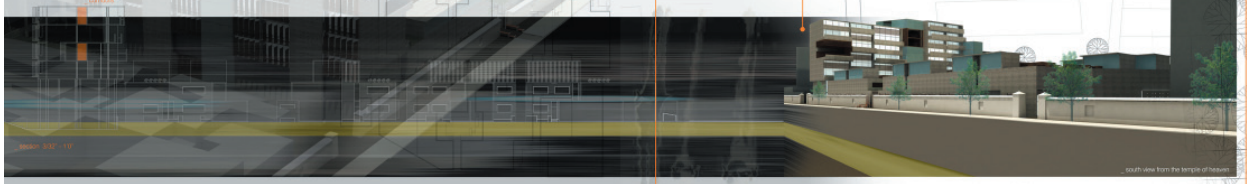
public space / north facade

exterior courtyard

market space



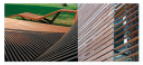




_south view from the temple of heaven

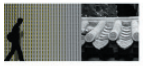
_re-use of tiles creates screening with varying degrees of exposure

_materials palette



wood _used as cladding and sunshading (louvers) for the interior of courtyards as well as railings

concrete _board form concrete will be used as the main structure for the lower density housing



tiles _the reuse of tiles from past courtyard houses will be used to create screen walls with varying degrees of transparency

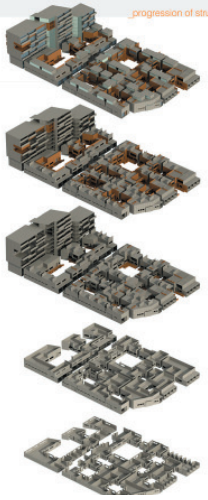
vegetation _a combination of occupiable and unoccupiable green roofs will be implemented with the option for small contained gardens

water _a rainwater collection system will be implemented to provide water to the vegetation within the site as well as providing several reflection pools

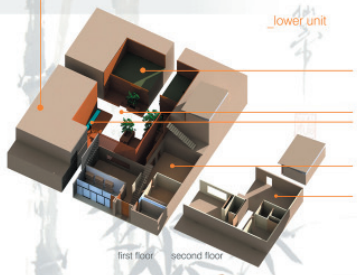
photovoltaics _transparent photovoltaics are used on the south facade of the two circulation corridors as well as implemented into the rooftscapes

channel glass _this transparent material will be used in the circulation corridors as well as the east and west facades of the third floor sun rooms

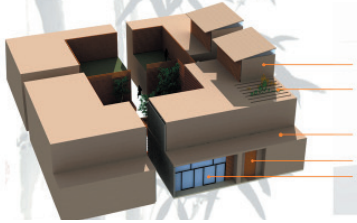
_progression of structure



_lower unit



first floor second floor



private green space allows for a more intimate outdoor setting

the courtyard becomes a more social place to encourage interactions and is also the main access to the residences

each unit has an access porch and many of the courtyards contain water elements using rainwater collection

as one progresses through the house the spaces become more intimate

this room on the second floor can open up entirely to the courtyard allowing for an extension of the space

these sun rooms allow access to the roof as well as providing a more solitary space or tea room for the family- they also provide more natural lighting for the second floor

controlled gardens give residents a place to plant for food, fun, or privacy benches are also installed within the gardens for reflection

the second floor is set back to maintain a sense of scale on the ground level - this space will be green and usable for residents as well

the residential door is a sign of importance in China and they should be distinguished and prominent

this home resides along the commercial corridor so it has a commercial and residential entrance- the commercial portion is very exposed while the residential portion is relatively hidden from the main streetscape

It has been my intention to create an environment for dwelling, working, living, and relaxing that also takes into consideration a part of the strong Chinese tradition of building. I believe the use of the courtyard as a small neighborhood space will create a warmer, more social environment. The larger courtyards will allow more people to interact and children can meet and play games close to home.

The people living on the site do not have a very high quality of dwelling. They have limited space and resources. However, directly outside of their neighborhood on a bus stop sign is an image portraying a very modern living situation. The proposed project gives them more of the social and community spaces that previously took place in the middle of streets. However, the scale and progression through the site still remain in order to preserve those qualities which define the space itself.

The project connects well with the neighboring hutong, and there are several social spaces and markets to connect the two urban fabrics. There is a lot of emphasis placed on the shifting of scale as well as the human scale of the materiality. I wanted this development to be tangible, tactile, a desirable place with a few surprises.

The underlying grid allows for a diversity within uniformity. No two courtyards or apartments on the lower portion are exactly alike; however, because the dimensions are similar, the construction can be fairly consistent. The courtyards each contain a slightly different feel. Some are more private that others, and many of them contain slightly differing elements. However, all paths leading to the courtyards are constrained and contain walls of re-used tiles as screening devices. It is, in a way, screening the present through the past.

The high rise structure utilized the two circulation corridors as a means of viewing the city and paying homage to architecture of the past. It is a reminder of where they came from, as they are moving forward at a pace they have never seen before.

This has definately been one of the most wonderful and challenging projects I have had the opportunity to worked through. Having traveled to China twice in nine months and seen the amount of change occuring in such a short time has been incredible. It has stretched me as a designer and as an individual, and I plan to continue this experience by working in TianJin this upcoming summer. Hopefully I will have learned more Chinese by that point in time.

To those of you who may be interested in taking on the challenge of international architecture, I strongly recommend the experience. I have barely touched the surface of this project and I believe it will be an ongoing process. One could easily work on this project for many years.

I enjoyed the challenge of working with high density on two differing levels; however, even more so, I enjoyed immersing myself in a culture and a way of working and dwelling different from my own. There were so many directions that I did not have time to explore. Further development of social spaces of the high rise as well as the connection between the two developments may create a stronger space; however, I am very pleased with the established relationships and languages within the two structures.

It will be interesting to watch Beijing grow in this rapidly changing time, especially with the Olympics coming up in August 2008. This is a time of great opportunity for architects both in China and abroad to create a strong positive impact for the future of this growing nation.

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